

# *The* **Iron Age**

A CHILTON

PUBLICATION

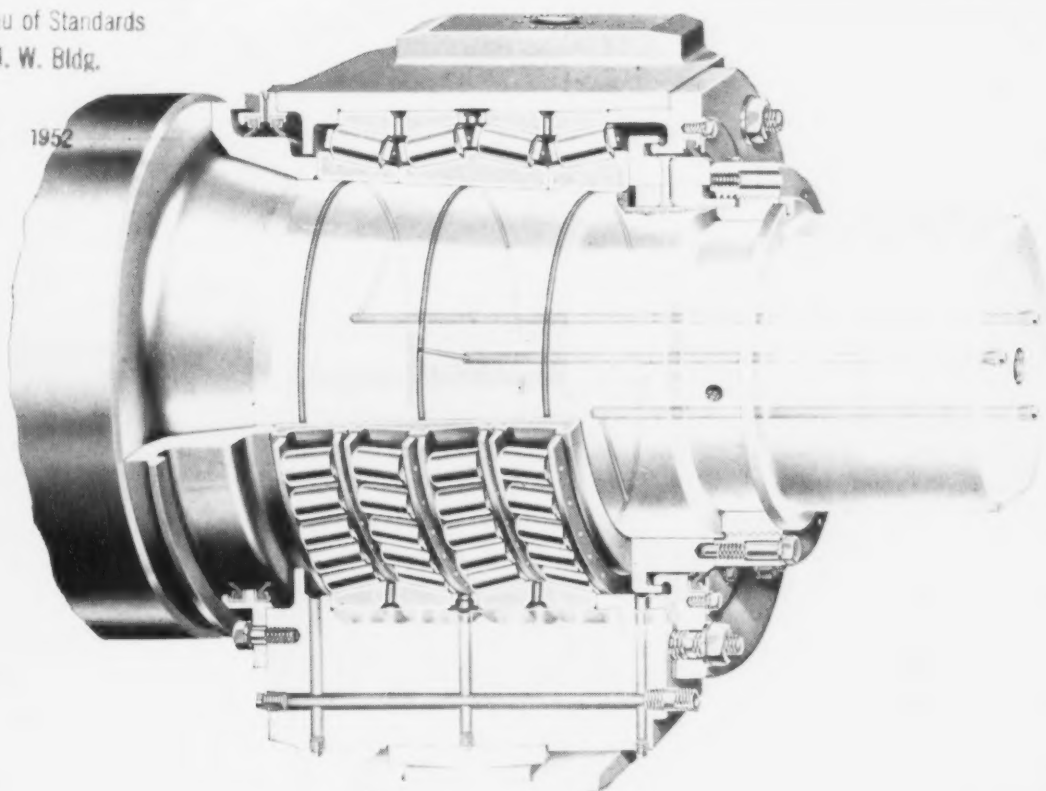
THE NATIONAL METALWORKING WEEKLY

October 2, 1952

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National Bureau of Standards  
Library, N. W. Bldg.

OCT 7 1952



## **New tapered bore 4-row TIMKEN<sup>®</sup> bearing combines interference fit with easy removal!**

**N**OW high-speed mills can get a 4-row tapered roller bearing that combines maximum bearing capacity and interference fit with easy removal! It's the new Timken<sup>®</sup> tapered bore bearing—long used in 2-row bearings, but now introduced in 4-row bearings for the first time.

The new Timken 4-row bearing with tapered bore is the greatest development in roll neck bearings since the Timken Company pioneered the first balanced proportion bearing in 1941.

Like other Timken roll neck bearings, this new tapered bore bearing permits maximum roll neck size and greater mill rigidity, eliminates need for special thrust bearings, makes possible higher rolling mill speeds, permits stopping and starting of mills without loss of steel.







For additional information, write The Timken Roller Bearing Company, Canton 6, O. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

### **SEE THE APPLICATION OF THIS NEW BEARING DEMONSTRATED IN BOOTH 104-7 AT THE IRON AND STEEL SHOW**

The application of this new bearing will be demonstrated for the first time on an actual mill roll. Roll necks will be gaged to within .0001" using the air gage principle as pioneered and developed by the Timken Company.

# **TIMKEN**

**TAPERED ROLLER BEARINGS**

NOT JUST A BALL  NOT JUST A ROLLER  THE TIMKEN TAPERED ROLLER  BEARING TAKES RADIAL  AND THRUST  LOADS OR ANY COMBINATION 

# Farval eliminates human element in jaw crusher lubrication

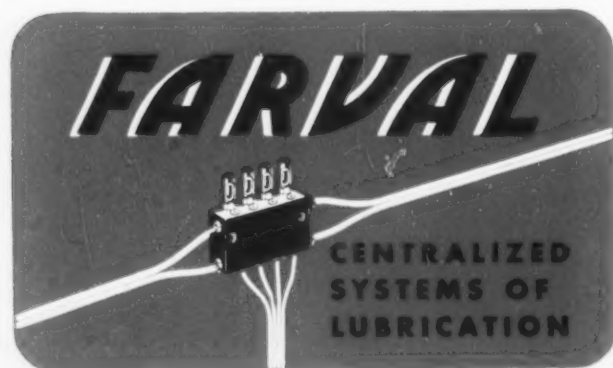
**D**AY in, day out, this 36" x 54" jaw crusher reduces bulky slag for final processing, creating a punishing load on vital bearings. To keep these bearings from overheating, one man was employed practically full time at lubrication.

Then Farval's "better-than-human" centralized lubrication system was installed on the crusher. Resultant savings in manpower and lubricating maintenance prompted Buffalo Slag's plant engineer to write: "Because of the crusher's need for constant lubrication, it had been necessary to use a workman almost continuously pumping lubricant. Need for this man has now *been eliminated with the use of the Farval automatic system*, and we now have the assurance of constant and proper lubrication, eliminating the human element!"

Farval is the original Dualine system of centralized lubrication for industrial equipment, proved practical in over 25 years of service. The Farval valve has only two moving parts—is simple, sure and foolproof, without springs, ball-checks or pinhole ports to cause trouble. Through its full hydraulic operation, the Farval system unfailingly delivers oil or grease to each bearing—as much as you want, exactly measured—as often as desired. Indicators at all bearings show that each valve has functioned.

In or near your city, there's a Farval engineer, ready to discuss your lubrication problems, to suggest a proper system to meet your particular needs. The Farval Corporation, 3252 East 80th Street, Cleveland 4, Ohio.

*Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.*



FARVAL—Studies in  
Centralized Lubrication  
No. 132

**KEYS TO ADEQUATE LUBRICATION**—Wherever you see the sign of Farval—the familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine will be properly lubricated. Farval manually operated and automatic systems protect millions of industrial bearings.

*Pictured is Birdsburn-Buchanan jaw crusher installed at the processing plant of The Buffalo Slag Co., Woodlawn, N.Y. Illustration by courtesy of Pit & Quarry.*

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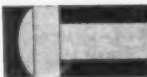

## The right wire for your cold-heading job

When you start with the right steel, cold-heading comes easy. It's Bethlehem's business to supply that steel, in the form of wire that's been custom-made to meet the requirements of your product.

Cold-heading wire has to take punishment—upsetting, extruding, slotting, punching, trimming, pointing. In Bethlehem's wire mills, steel is tested and inspected for internal soundness, uniformity of chemical composition and freedom from injurious surface defects. Accurate size is another detail we watch carefully when we make your cold-heading wire.

We invite you to call on our technical staff for assistance on any problem involving steel wire—for cold-heading or any other use. Phone our nearest sales office or write to us at Bethlehem, Pa.

### Cold-Heading Saves Steel

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		73%
		61%

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# BETHLEHEM WIRE



# The Iron Age-DIGEST

Vol. 170, No. 13  
October 2, 1952

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THE IRON AGE, published every Thursday by the CHILTON CO. (INC.), Chestnut & 56th Sts., Philadelphia 39, Pa. Entered as second class matter, Nov. 8, 1932, at the Post Office at Philadelphia under the act of March 3, 1879. \$8 yearly in United States, its territories and Canada; other Western Hemisphere Countries, \$15, other Foreign Countries, \$25 per year. Single copies, 35c. Annual Review and Metal Industry Facts Issue, \$2.00. Cable: "Ironage," N. Y.

## NEWS DEVELOPMENTS

### IRON POWDER USE GROWS, OUTPUT ROCKETS—P. 37

Expansion doesn't adequately describe multiplication taking place in iron powder production. Need seen for 25,000 to 50,000 tons yearly by 1954. Industry won't accept lack of supply as excuse for not using powder. Military demand is growing but long term confidence is based on civilian consumption.

### HOW NEAR IS THE INDUSTRIAL ATOMIC ERA?—P. 40

Some industry spokesmen estimate atomic energy will be used to produce commercial electrical power in about 5 years. But AEC believes 20 years is a more accurate guess. A great deal of study and experimentation must be completed before the atomic era becomes a reality. The profit picture is cloudy.

### FLAME-PLATING MAKES METALS MUCH TOUGHER—P. 43

New method of coating metals with tungsten carbide shows high resistance to wear. Flame-plate coating has a wear life up to five times that of sintered tungsten carbide. Low temperature plating method makes it adaptable for wider range of metals. Can be used to coat greater variety of metal shapes.

### HOW VARIETY OF STANDARDS BECOMES CURSE—P. 48

Although widely accepted and uniform standards are a boon to economic mass production, setting up a variety of standards in each country overseas can become a curse. Standards abroad have been multiplying like rabbits and many differ country-by-country, lowering efficiency and curbing trade.

### PRODUCING CARS IN '52 A ROUGH STRUGGLE—P. 54

Car industry won't break output records but it still worked production miracles. Manufacturers showed great ingenuity in the face of tool freeze and metal shortages. Tooling programs set back, some companies went into tool business. Stretching short materials pushed up production, maintenance costs.

### DESIGN INDECISION WORRIES TOOL BUILDERS—P. 65

Delay in getting final decision on Air Force part designs has some machine tool men wondering if they aren't making machines that will be unsuitable when final design is determined. Trade also fears Z-2 materials priority may be withdrawn by government and start competition for materials.

# of the WEEK in metalworking

## ENGINEERING & PRODUCTION

### AUTOMATED FORGING LINE BOOSTS OUTPUT—P. 93

A completely automated crankshaft forging line at Dodge Div., Detroit, has virtually eliminated manual handling in production of semi-finished crankshafts from SAE 1045 steel billets. First automotive installation of its kind, it may set the pattern for further mechanization in the industry.

### CARBIDE TOOLS CHALLENGE MACHINE EFFORT—P. 97

Complete carbide tooling increased output 6 times and tool life 10 times over that of high speed steels. As carbide tooling improves, greater consideration must be given motor power, tool setting facilities, stock loading and chip disposal. These are considerations for balancing tool and machine efficiency.

### SUPERCHARGER ROTOR MACHINING SPEEDED—P. 100

Rotors for superchargers must be properly machined to develop the pressures for which they are designed. Twelve machines have been set up to rough and finish rotors to close running fits. In some operations, the hardened steel shaft and the three aluminum lobes are machined simultaneously.

### DIP AND ETCH AIDS ALUMINUM INSPECTION—P. 102

A special alkaline etch and nitric acid treatment proves a big help in quality control. The treatment helps inspectors to spot unsound forgings. Lubricant smut is easily removed but discoloration remains in cracks and discontinuities caused during forging. Inspectors readily pick out substandard forgings.

### NEXT WEEK—SPECIAL METAL SHOW ISSUE

Next week's issue will bring you a special 32-page section, "Metals for Tomorrow." It will cover the source, applications, potentialities, price and suppliers of some fascinating but little known metals: Cerium, germanium, lithium, selenium, molybdenum, vanadium, silicon and zirconium—plus 20 pages on titanium.

The titanium article will be packed with hitherto unpublished data on the forging, forming, welding and machining of titanium. First disclosure of how it is made commercially will be supplemented by an appraisal of its potential, with new data that metalworkers need to handle this new metal.

## MARKETS & PRICES

### STUDY URGES NEW ENGLAND INDUSTRY ON—P. 38

A research report was recently completed to encourage New England industry in growth and greater activity. The report listed potential new markets, possible new products and new fields. Conclusions and recommendations of this industry-by-industry account should be useful in appraising the future.

### OPS PUTS SQUEEZE ON FASTENER INDUSTRY—P. 44

GOR 35, allowing pass-through on raw material cost increases only, permits 2.2 to 2.5 pct price hike. But labor and transportation are higher, too. Fastener producers realize others may be in tough spot, but they feel their own costs are high enough to warrant a minimum boost of 10 to 12 pct.

### HOW DEFENSE MONEY IS BEING OBLIGATED—P. 49

Defense contract spending for the current fiscal year got off to a fast start as the military obligated \$5.5 billion in July. Air Force accounted for \$2.2 billion alone. Army, Navy total was a half-billion each. Remainder was for pay and allowances, etc. Total obligations since Korean outbreak, \$117 billion.

### WILL WASHINGTON DROP PRICE CONTROLS?—P. 59

Administration may hate idea of surrendering control authority but the horse laughs now accorded to ineffective price controls may force its hand. Controls over prices may be scrapped because they are seen as a political liability to the Democrats. Blame for this will be pinned on special interests.

### STEEL SIGHTS SET ON PRODUCTION RECORD—P. 119

Barring unforeseen trouble the steel industry should set an all-time production record during October. The industry has been gaining steadily since the disastrous strike of June and July; is now fully recovered. Actual capacity is now thought to be more than 113 million tons on an annual basis.

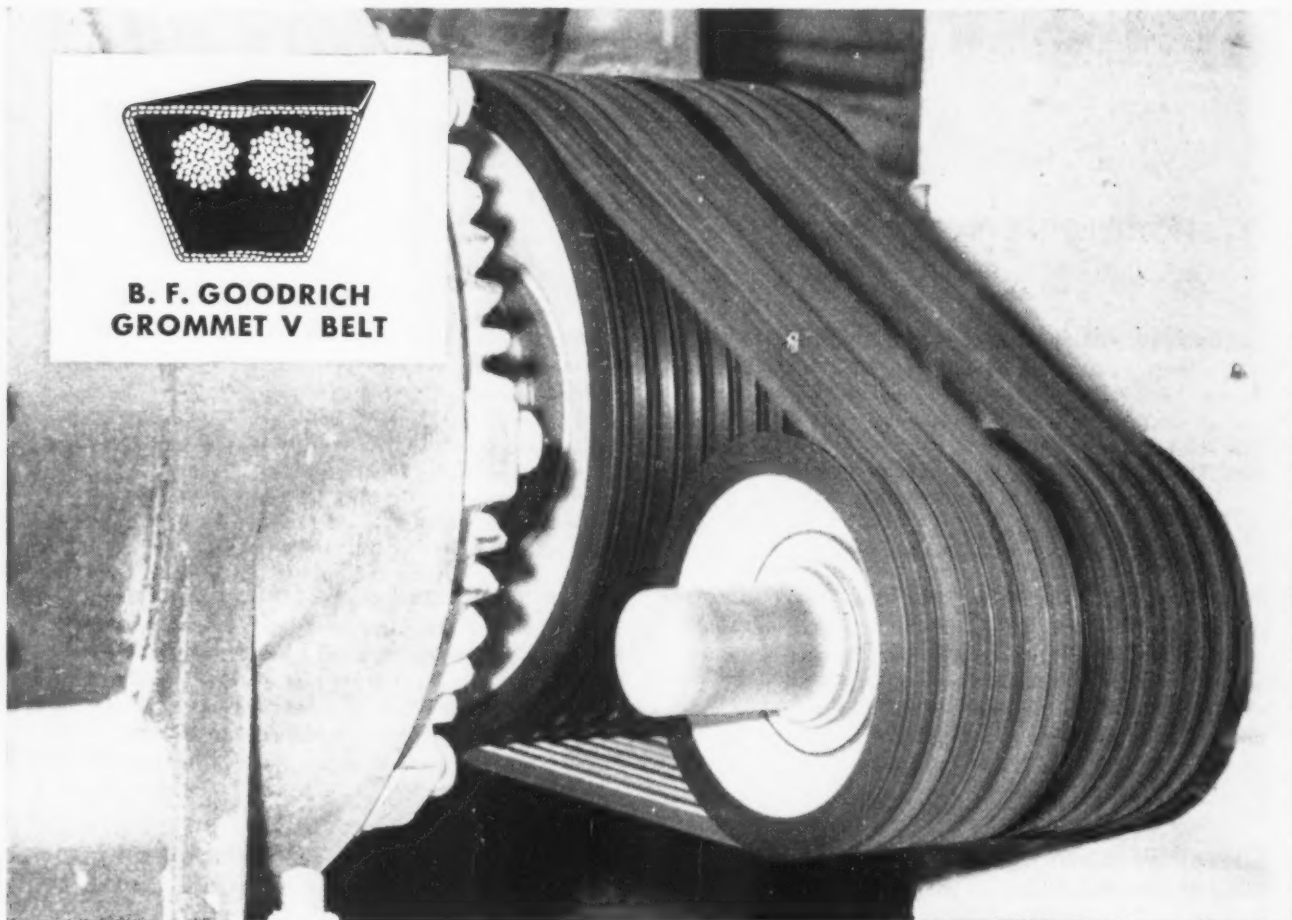
### OPS TO CONSIDER COPPER PRICE GRIPES—P. 122

Military needs of brass mill products have leveled but it won't help civilian consumers. Pricing, stockpiling, labor cloud copper outlook. Price stabilizers agree to hold meeting with industry on multiple price muddle. Action uncertain. Quota for first quarter about the same as for third quarter.

RESEARCH KEEPS

**B.F. Goodrich**

FIRST IN RUBBER

**B. F. GOODRICH  
GROMMET V BELT**

## Where B.F. Goodrich grommet belts outlasted others 3 to 1

*B. F. Goodrich grommet V belts cut costs 20 to 50%*

ORDINARY belts, previously used on this drive, couldn't stand the heavy load, couldn't take the strain of 24-hour-a-day service. There were frequent shutdowns for repairs. Belts were averaging only 3 months' life. Then B. F. Goodrich grommet V belts were installed. When the picture was taken, the grommet belts had already outlasted ordinary belts 3 to 1, maintenance costs had been cut nearly 100%, and the belts still looked good for a lot more service. Here's why:

**No cord ends**—A grommet is endless, made by winding heavy cord on itself to form an endless loop. It has no overlapping ends. Because most of the failures in ordinary V belts occur in the region where cords overlap, the endless cord section in a grommet V belt eliminates such failures.

**Concentrated cord strength**—All of the cord material in a B. F. Goodrich grommet belt is *concentrated* in twin grommets, positioned close to the driving faces of the pulley. There are no layers of cords to rub against one another and generate heat; cord and adhesion failures are reduced. And grommet V belts stretch less—only  $\frac{1}{3}$  as much, on an average, as ordinary V belts.

**Better grip, less slip**—Grommet V belts have more rubber in relation to belt size. Without any stiff overlap, they're more flexible, grip pulleys better. Size for size, grommet belts give  $\frac{1}{3}$  more gripping power, pull heavier loads with a higher safety factor. Because there is less slip, there is also less surface wear.

**They cost no more**—Grommet V

belts cut costs because they last longer, increase production because machines keep running with fewer interruptions, reduce maintenance costs because they need less attention, yet they cost not one cent more. Available in C, D, and E sections. But remember, only B. F. Goodrich makes the grommet V belt (U. S. Patent No. 2,233,294), so to get all these savings, call in your local BFG distributor the next time you need V belts, or write *The B. F. Goodrich Company, Industrial & General Products Div., Akron, Ohio.* (Available in Canada)

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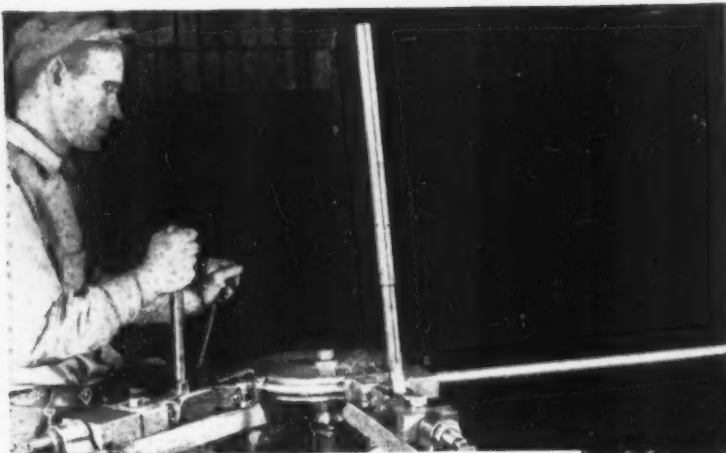
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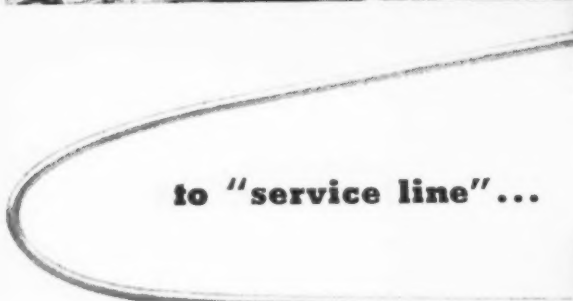
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October 2, 1952



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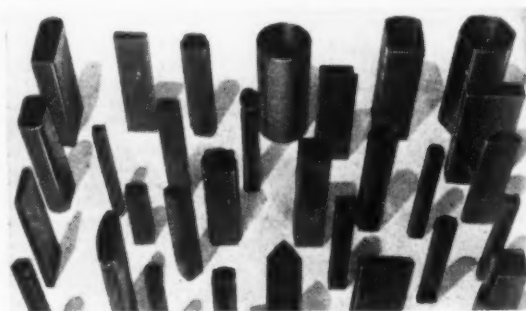
To cut your shop costs . . . to give your products that extra "sales" appeal, look into Armco Welded Steel Tubing.

Used in place of angles and other solid sections, Armco Tubing simplifies design and speeds production. And its smooth surface makes your products more modern and attractive — more salable.

Tubular parts mean your products are stronger and lighter in service, too. Loaded as a beam, Armco Welded Tubing has less than one-fifth the deflection with the same amount of steel. And as a column, it offers more than five times the load-carrying capacity with the same amount of steel.

Armco Welded Steel Tubing comes in a variety of made-to-order shapes in Hot-Rolled or Cold-Rolled

Steel; in ALUMINIZED (an aluminum-coated steel) and in ZINGRIP (a specially zinc-coated steel). Our Tubing Specialists will help you select the *right* kind of tubing for your products. Write for further information.



These are some of the standard and special shapes of Armco Welded Steel Tubing. With either standard or special shapes, you can reduce fabrication time and costs, give your products a more substantial look.

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Indexed in the Industrial Arts Index  
and the Engineering Index.



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National  
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Publications

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## Editorial

*The Iron Age*

FOUNDED 1853

## On Bread Alone?

THE expression "man cannot live on bread alone" is an ancient one. There was a time when it was higher in man's mind than it has been for many years. There are signs that it is coming back in favor. The feeling—that station, money and work alone are not enough—is sneaking up on businessmen and others who hold key public or industrial jobs.

There appears to be a growing realization that much that is called realism may not be realism at all. With mental strife and with the international situation being what they are many are asking where we are headed.

Men often get to an age which they like to associate with maturity, experience and good judgment. They say they are being realistic. As far as that goes it is good. When this attitude is improperly used to keep a status quo or when it is used to deride or look with superiority on really good ideas it may not be so good.

We are not doing a good job with our relationship between labor and management. It may well be that labor's new-found power is partly at fault. But that does not resolve the issue. We are not doing such a good job of protecting democracy from ideas that sound good but are phony. It may be that we are using too many of the tools of the people with whom we violently disagree. We are not doing a good job with our children or ourselves.

There is something wrong somewhere. Each gathering has its "private corners" where this "thing" is talked about. There are more men today—and women—who are trying to do something about it. Gone is the idea that "what can two or three of us do?" These two or three are trying to get two or three more or two or three thousand more.

Deep among businessmen—and they don't talk about it much—is a vast personal inventory taking. They are wondering what they can do individually about such things as inflation, charity, pensions, democracy and religion. They are doing it quietly and making progress.

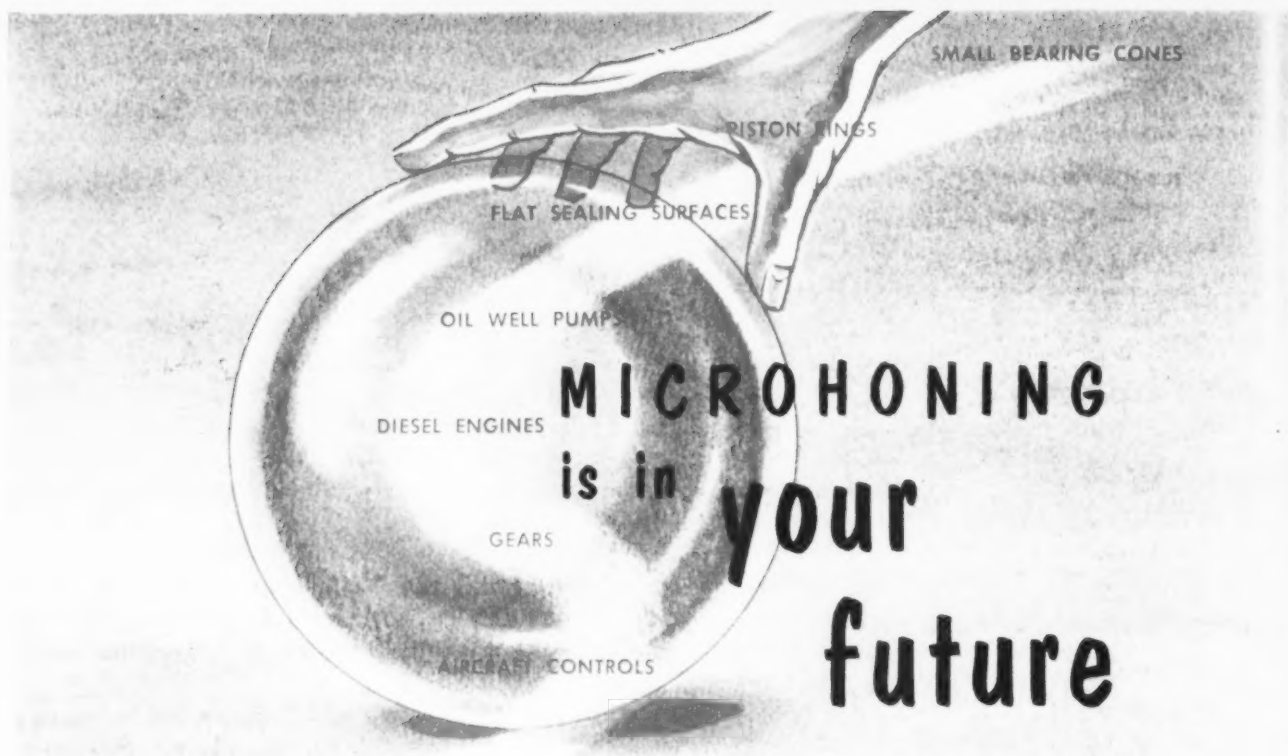
It may be that "realism" is really testing idealism and making it work for tomorrow. Who knows?

*Tom Campbell*

Editor

October 2, 1952

7



# MICROHONING is in your future

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if your operation requires the generation of accurate cylindrical or flat surfaces.

Hundreds of industrial plants have found that Microhoning not only improves the quality of the surface, but also increases production—reduces scrap, handling, and inspection costs.

No, you do not need a crystal ball.

The potentials of the Microhoning process can best be judged by the past accomplishments and present policy of the organization that developed it.

To give industry a complete service, the Micromatic Hone Corporation has an organization and sales policy unique in the machine-tool business. One well-coordinated organization sells, engineers, builds, and services the complete installation. Micromatic assumes full responsibility for all the equipment and the results obtained with the Microhoning process.



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MICROHONING = STOCK REMOVAL + GEOMETRY + SIZE CONTROL + SURFACE FINISH

# Dear Editor:

## Letters from readers

### Precautions

Sir:

We refer to the article on p. 91 of your Sept. 4 issue describing the effects of the second earthquake at Bakersfield, Calif. This is an excellent general description of the damage. We note, however, the following paragraph:

"Amid the indiscriminate damage wrecked by the latest earthquake, there were the customary freak escapes. The 2-year old Kern steam plant 6 miles from town was unscathed despite the fact that its 60,000 and 100,000 kw turbines were going at 3600 rpm when the shock occurred."

The implication appears to be that pure chance was responsible for this performance or perhaps that the earthquake treated this particular spot with special favor. Actually, there appears to be no reason to believe that the Kern steam plant was not subject to severe earthquake shock.

While no designing engineer would have the temerity to claim that equipment and structures for a large, heavy, tall power station can be designed so as to be unscathed in an earthquake of any severity, great care was exercised in the design to anticipate and provide resistance against the effects of a severe earthquake. The steel frame supporting the high massive boilers, the steel frame of the turbine room with its crane, were carefully braced with special attention to the details of connections. The supports of all equipment and even the anchorage of piping were designed with consideration to the effect of earthquake shock.

We are calling this to your attention since these precautions may have had some bearing on the earthquake performance of the Kern steam station. You may also be interested in the satisfactory performance of structural steel framing in a severe earthquake.

W. F. RYAN  
Engineering Manager  
Stone & Webster Engineering Corp.  
Boston

### Older Worker

Sir:

On Elihu Root's 80th birthday, ex-Chief Justice Charles Evans Hughes greeted him and remarked how well he looked. "Yes," said Root, "I am as good as I ever was—for about one hour a day." The shortening of the time period for being as good as ever

is the basis of my retirement plan for white collar workers.

This new proposal is to give to the employee an option to work on reduced weekly hours, after 65 years age is reached, with correspondingly reduced salary, so that when 70 years age is reached the employee will be working half time and at half pay; and may continue on that basis to 75 years age, if he so desires and the medical officer of the company approves.

This plan recognizes the need of salaried employees over 65 years of age for more time for rest and recuperation. It also recognizes the need of corporations to continue to utilize the services of well trained and efficient employees whose brains and personalities are unimpaired, who are physically able to produce at least as effectively as they ever could for short periods, but whose physique is no longer suited to the long time grind of incessant work in the daily work period which was established largely on the basis of their youthful stamina.

Douglaston, L. I.

Mr. Brown refers to the editorial "The Older Worker" which appeared in the Sept. 11 issue.—Ed.

### New Cartridge

Sir:

We read with interest an item on the Newsfront page of your Sept. 11 issue concerning a new cartridge developed to safely permit addition of sodium, lithium, calcium and other highly reactive agents to molten baths of metal.

Will you please inform us who is the manufacturer of this cartridge.

A. KERZNER  
New Jersey Metals Co.  
Elizabeth, N. J.

The cartridge was developed by J. S. W. Bates, Route 2, Box 494A, Phoenix, Ariz.

### Portable Tester

Sir:

On the Newsfront page of your Aug. 7 issue you mentioned a portable device for determining drawing quality of cold reduced sheet and strip.

Please be kind enough to advise us to whom we can apply for further information.

R. F. PEARSON  
Vivian Bond & Co., Inc.  
New York

For more details on this new portable device write to Steel City Testing Machines, Inc., 8843 Livernois Ave., Detroit 4, Mich.



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Save both weight and time in aircraft assembly by using Pheoll Hi-Shear Rivets. These precision made fasteners are easy to install and provide maximum shear strength when critical parts are joined.

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- HS 28 Flat Binding Head—Close Tolerance Shank
- HS 37 Close Tolerance 100° Countersunk Head—Close Tolerance Shank—Minimum Tensile Strength 160,000 p.s.i.
- HS 38 Flat Binding Head—Close Tolerance Shank—Minimum Tensile Strength 160,000 p.s.i.
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- HS 48 Flat Binding Head—Interference Fit—Minimum Tensile Strength 160,000 p.s.i.

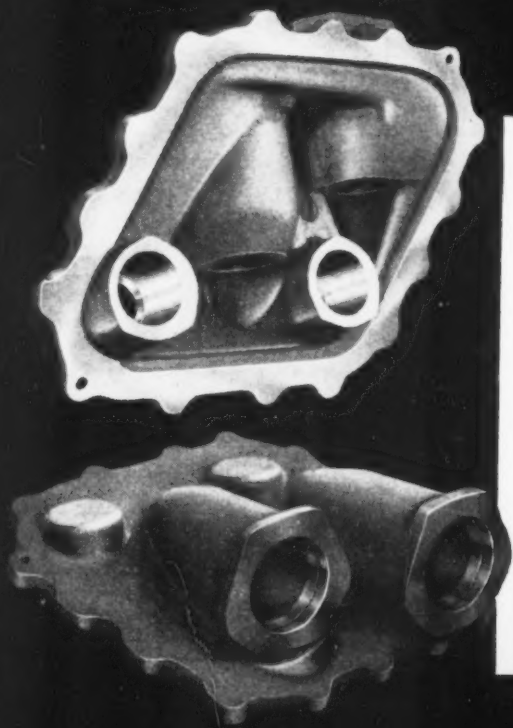
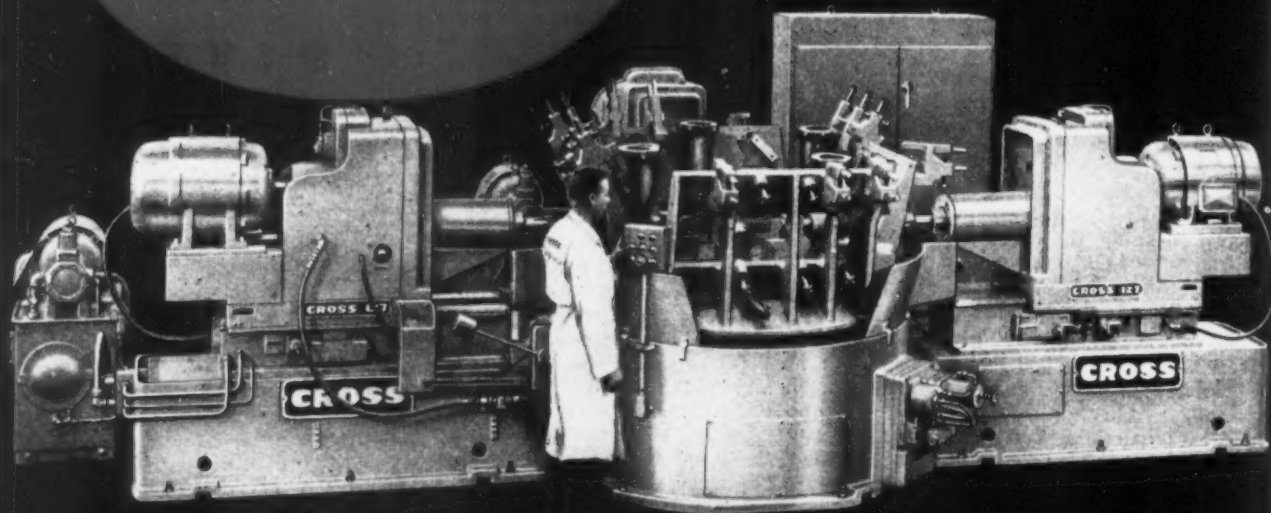
NOTE: Other types made to customer's specifications. Ask about Hi-Shears for industrial use.

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- ★ Drills and reams two holes of 3.995/4.000 diameter in 11 pieces per hour at 100% efficiency.
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- ★ Fluid motor driven index table with four stations—one for loading, one for drilling, one for flat bottom drilling, one for reaming.
- ★ JIC standard hydraulic and electrical construction with stranded wire.
- ★ Other features: hardened and ground ways, hydraulic feed and rapid traverse, pre-set tools, automatic gravity operated cam clamping for the index table.

Established 1898

THE **CROSS** CO.  
DETROIT 7, MICHIGAN  
*Special* MACHINE TOOLS

# Fatigue Cracks

by Charles T. Post

## Credit Is Due?

One of our contemporary business publications, which rightly lays claim to being something of an authority in its industry, was approached the other day by a company president who needed some hitherto uncompiled statistics for an important speech. The magazine was glad to help out.

The speech drew considerable favorable attention, but the speaker neglected to mention the source of his statistics.

That didn't bother our publishing friends, but it did hurt a little when the company's public relations man sent over a copy of the speech with the suggestion that they might want to print it.

## Slag

This being the week of the annual convention of the Association of Iron and Steel Engineers, we are reminded that it's been quite a while now since we have received a letter reading, "There is about 100 tons of iron ore on some property my brother owns, and I wonder if you could tell me where we could buy a blast furnace . . ."

## Voting Public

Your f.f.j. being non-political, we can't tell you the name of the candidate who was speaking on television the other night when we happened to be at a friend's house with some friends and friends of friends.

We feel obliged to report, though, that one lady commented, "I wouldn't vote for him. Look how mussed his shirt collar is."

And we also will say that another lady came right back with, "Don't let that trouble you, my dear. You must remember that he went to Harvard."

## Vital Statistics

No one reads the vital statistics column as closely as Charles C. Finn, Seattle agent for the John Finn Metal Works. And no one, we are certain, finds so much room for homey philosophy and speculation on the names that appear.

We can't quote his exact comments, but we see no harm in reporting that with this week's crop

of clippings is one reporting that a baby named Wetter came into the world. Mr. Finn noticed, too, that a Mrs. Loving bore a son and a Mrs. Smiley, a daughter, the same day at the same hospital. He speculates that if the kids grew up and got married their future could not help but be happy.

He also has a keen eye for aptonyms—in which the name "fits"—in the news columns. Recent clippings show that the new Australian ambassador to the U. S., Mr. P. C. Spender, will be located in Washington, an appropriate home for a spender. Mr. Finn also finds news of a teacher named Mrs. Lena School; of the president of the Newport Aerie of Eagles named Barney Bird; of a jockey named Slim Slender; and of a minister named Rev. Richard Bishop.


There are opposite cases, too, which should be called anaponyms, we suppose—a Mr. Gentleman who punched a train conductor in the eye; a couple named Marriage who got a divorce; and a man named Faith who was sued by his wife on the grounds of unfaithfulness.

## Puzzlers

The solution to last week's puzzle is too long to print here, but we will be happy to send a detailed solution to anyone who wants it. The key to the solution is the first weighing. If you put four coins on each side of the balance you were well on your way to the solution.

The tank problem proved easy for C. B. Smith, Portland Copper & Tank Wks.; G. Pascoe, Ford Motor Co.; A. Romeo, Denison Engineering Co.; L. D. Rice, Timken Roller Bearing Co.; T. B. Hudson, Jr., Albert Curry & Co.; J. Cutt, Clark Equipment Co., and A. M. Woodall, Ingalls Iron Wks.

C. G. Heilman, Commonwealth Industries, Inc., apparently has a small farm for a hobby. One day he said to his hired hand, "This bag of feed will last our flock of chickens for 15 days; but if we had 21 more chickens, and fed each chicken  $\frac{2}{3}$  as much as we are feeding them now, it would last only 12 days." How many chickens does Mr. Heilman have?



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DEMANDS  
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Technique of Western Felt production and processing has built an enviable reputation for engineering precision. Chemical specifications must be perfectly met—parts from wool softness to rock hardness are cut to close tolerances. As an extremely versatile material Western Felts are resilient, flexible, compressible. They resist oil, water, heat, age—do not ravel, fray or lose shape. New uses found daily. It pays to depend on Western Felt.

**Check Possible Uses for Your Product**

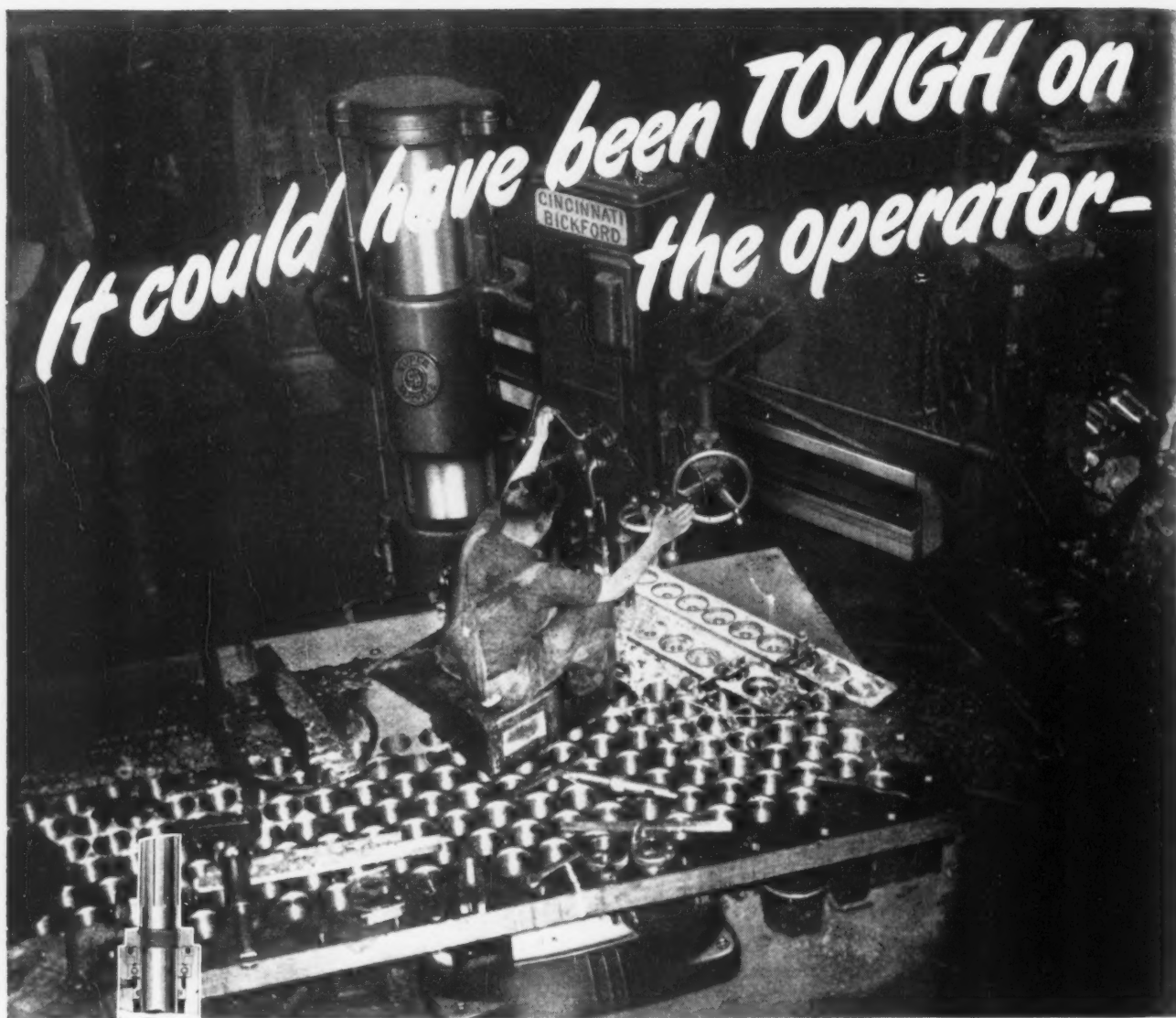
- Excluding dirt, grit, dust • Retaining lubricants
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- Cushioning shock • Padding, packing, seals
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Sheet and Roll Felt Manufactured for Special Purposes and To Meet All S.A.E. and Military Specifications.



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Contributing to the unusually long trouble-free performance of Super Service Radial Drills is the spindle and sleeve construction. Note that the sleeve and its spindle supporting bearings feed down with the spindle so that no matter what length of feed is required or how far the spindle is extended from the head, it never feeds away from its supporting bearings, but is always rigidly supported by these bearings just above the spindle nose.

Power, stamina, accuracy and concentrated operator control were all required on this job.

One drilling and two fly cutting operations were performed. Size of holes: 5", material 6½" armor plate. From a minimum of fifty holes to several hundred were produced per piece.

The Cincinnati Bickford Super Service Radial Drills give a sustained accurate and speedy performance—with maximum ease to the operator.

Write for Bulletin R-29 for details on this modern powerful radial drill.

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BICKFORD**



RADIAL AND UPRIGHT DRILLING MACHINES

**THE CINCINNATI BICKFORD TOOL CO.**

Cincinnati 9, Ohio, U.S.A.

## Conventions & Meetings

Sept. 29-Oct. 2—American Institute of Steel Construction Inc., annual convention, Empress Hotel, Victoria, B. C., Canada. Institute headquarters are at 101 Park Ave., New York.

Sept. 30-Oct. 3—Assn. of Iron & Steel Engineers, annual convention and exposition, Cleveland Public Auditorium, Cleveland. Association headquarters are in the Empire Bldg., Pittsburgh.

Oct. 1-3—National Assn. of Corrosion Engineers, South Central Region Meeting, Jung Hotel, New Orleans.

Oct. 1-4—Society of Automotive Engineers, Inc., National Aeronautic Meeting, Hotel Statler, Los Angeles. Society headquarters are at 29 W. 39th St., New York.

Oct. 5-8—Controllers Institute, 81st annual meeting, Sheraton-Cadillac Hotel, Detroit. Institute headquarters are at 1 E. 42nd St., New York.

Oct. 8-10—Compressed Air & Gas Institute, semi-annual meeting, Shawnee Inn & Country Club, Shawnee-on-Delaware, Pa. Institute headquarters are at 90 West St., New York.

Oct. 10-11—American Society of Tool Engineers, International Area Meeting, Statler Hotel, Buffalo. Society headquarters are at 10700 Puritan, Detroit.

Oct. 11-14—National Assn. of Waste Material Dealers, National fall meeting, Hotel Ambassador, Los Angeles. Association headquarters are at 271 Madison Ave., New York.

Oct. 13-17—American Institute of Electrical Engineers, Fall General Meeting, Jung Hotel, New Orleans. Institute headquarters are at 33 W. 39th St., New York.

Oct. 14-16—Seventh Annual Industrial Packaging & Materials Handling Exposition, Chicago Coliseum, headquarters are at 20 W. Jackson Blvd., Chicago.

Oct. 16-17—Gray Iron Founders' Society, Inc., 24th annual meeting and convention, Hotel Cleveland, Cleveland.

Oct. 17-19—Metal Treating Institute, annual meeting, Hotel Warwick, Philadelphia. Institute headquarters are at 271 North Ave., New Rochelle, New York.

Oct. 19-21—Conveyor Equipment Manufacturers Assn., Annual Meeting, The Greenbrier, White Sulphur Springs, West Virginia. Association headquarters, 1129 Vermont Ave., N. W., Wash., D. C.

Oct. 19-24—American Welding Society, 33rd National Fall Meeting, The Bellevue-Stratford Hotel, Philadelphia, Pa.

Oct. 20-22—American Institute of Mining and Metallurgical Engineers, Institute of Metals Div., fall meeting, Hotel Adelphi, Philadelphia. Institute headquarters are at 29 W. 39th St., New York.

Oct. 20-24—National Metal Congress & Exposition, Convention Hall, Philadelphia.



## Specific Purpose Grinding Wheels

Only with specific purpose wheels engineered to your individual ways of working and to your objectives in each progressive step, can you hope to match competitive efficiency and economy. Let us send a technically trained Engineer without cost or obligation to you, to show you how the 3-way gains from use of Electro Specific Purpose Wheels can be introduced into your plant.

With them, you'll get more and better production and you'll reduce your production costs.



*Electro Refractories & Abrasives Corporation*

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### *A century of achievement...*

Studebaker's big, modern South Bend plant symbolizes the century of growth and achievement which have earned for this company an enviable reputation for high quality products and world-wide recognition as America's fourth largest manufacturer of automobiles.

## **How Standard's lubrication service works for Studebaker**

● Look almost anywhere in Studebaker's vast plant at South Bend, Indiana, and you'll see Standard's lubrication service at work.

In one of the many operating departments, the chances are you'll find the Standard lubrication specialist who serves Studebaker. He is assigned to the South Bend area and is close-at-hand to give Studebaker the lubrication engineering assistance they need when they need it.

Almost any day at Studebaker's, you'll see a Standard tank wagon or truck delivering the petroleum products that help keep production rolling. Because these deliveries are made from a nearby Standard warehouse, they are prompt and reliable. Most of the petroleum products used in the Studebaker plant are stocked in this warehouse and

are immediately available.

All along Studebaker's assembly and production lines, you'll find Standard Oil products at work. From one of the most complete lines of fuels and lubricants on the market, Studebaker has been able to select the petroleum products that exactly fit its needs.

All of these benefits—expert engineering service, fast and reliable deliveries, a complete line of high quality products—add up to one of the reasons why Studebaker has been a Standard Oil customer for over 50 years. Make Studebaker's experience the basis for putting Standard's lubrication service to work for you. Just phone your local Standard Oil (Ind.) office and ask to have the Standard Oil lubrication specialist in your area call on you.

## What's YOUR problem?



**Russ Jenkins** (left), lubrication specialist from Standard's South Bend office, and Studebaker's Paul Izdepski work closely together to get best results from Standard's fuels and lubricants.

Wherever your plant is situated in the Midwest, there is a Standard lubrication specialist close-at-hand who will work hand-in-hand with you on lubrication problems. Right in your neighborhood, too, you'll find a Standard office and warehouse. It makes immediately available to you a reliable supply of petroleum products. Phone your local Standard office soon, and find how you can profit through Standard's unique industrial lubrication service.

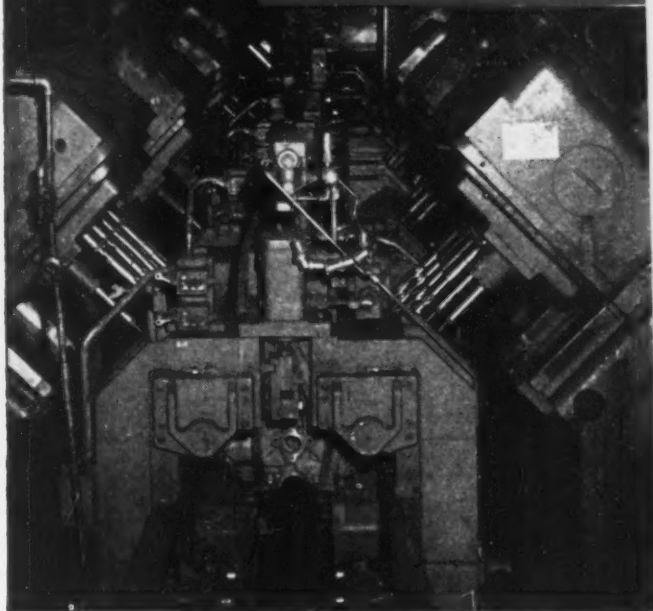


**STANDARD OIL COMPANY**  
( I N D I A N A )

## STANOBAR

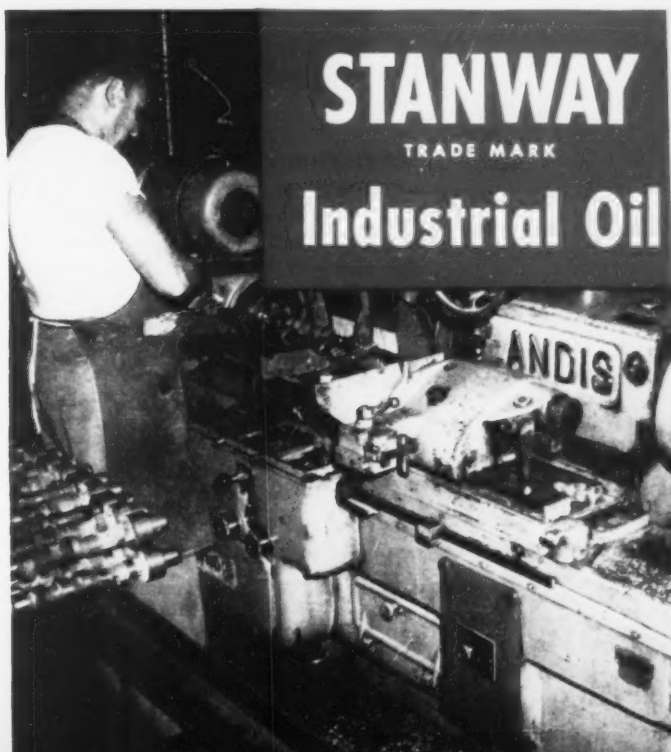
TRADE MARK

### Grease



**STANOBAR GREASE** is used throughout the Studebaker plant for lubrication of bearings in electric motors and oil pumps. Its high stability enables it to provide effective lubrication under a wide variety of operating conditions.

In Studebaker's many grinding machines, such as the one shown below, **STANWAY Industrial Oil No. 30H** answers a special need by serving both as a hydraulic oil and as a lubricant for ways and guides. The high stability necessary in a hydraulic oil and the oiliness needed in a way lubricant are uniquely combined in **STANWAY**.



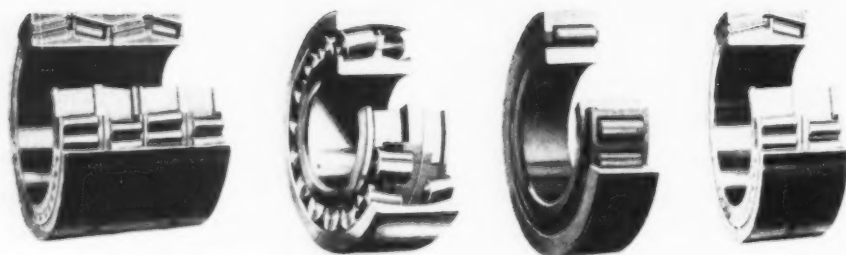
## STANWAY

TRADE MARK

### Industrial Oil



**designed for harmony...**



Torrington engineers have a thorough knowledge of the friction problems encountered in virtually every type of mechanical equipment. And they have had many years of experience with *all* types of anti-friction bearings. They are able to give sound, unbiased recommendations for the bearings best suited for the job at hand. Result: a harmonious blending of anti-friction bearing types with the products in which they are used.

Torrington engineers will be glad to help you—as they have many others—to select the bearings which will assure your products smooth, dependable operation.

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**BULLARD**

**MANUFACTURERS OF MACHINE TOOLS**



Mount Palomar Observatory — 69 miles north of San Diego, California

Kaufman & Fabry Photo

### ***The Invisible Background of Industrial Progress***

Among the many advancements in our country of free enterprise are the products of scientific research. Representative of such work is Mount Palomar Observatory of the California Institute of Technology. Located 69 miles north of San Diego, California, its

200-inch lens, ground at the University, brings the moon to within 28 miles of the earth. Palomar's big telescope used for photographing celestial objects can reach out to explore a spherical section of the Universe so colossal that light traveling 186,000 miles a second takes 2 billion years to cross the section. Such scientific equipment will permit more complete studies of the Universe and the effects of outlying bodies on our own world . . . In The Invisible Background of Industrial Progress are the manufacturers who use

\* *Modern Machine Tools* that enter into the many steps in the making of glass, grinding of lenses, producing delicate machinery and hundreds of other items required in the innumerable phases of scientific research.

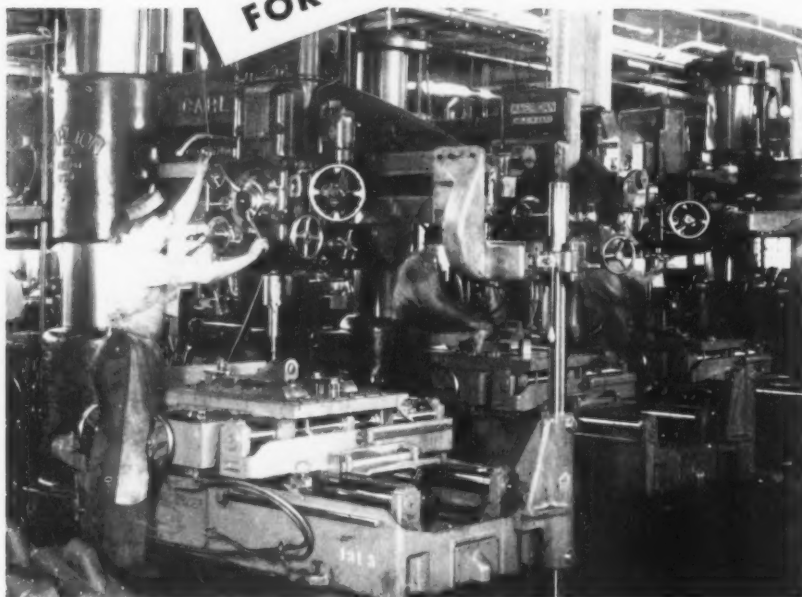
★ *For greater manufacturing economy  
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**THE  
BULLARD COMPANY**

**BRIDGEPORT 2  
CONNECTICUT**

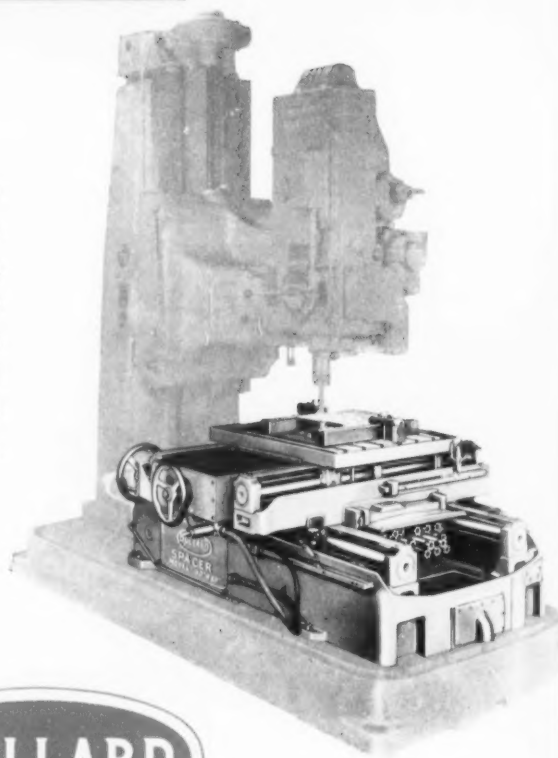
**BULLARD MACHINE TOOLS**

**FOR GREATER MANUFACTURING ECONOMY**



The Bullard Spacer is an ingenious table-like machine designed to be mounted under the arm of an accurate radial drill or the fixed arm of the Cincinnati Super Service Precision drill. When so installed it provides an accurate means of spacing for drilling, boring, reaming and threading several pieces or longer runs of work without the costly medium of jigs.

In actual use, several hundred of these Spacers have not only proved their reproductive accuracy but have shown almost unbelievable savings in manufacturing costs. In many instances it has proved profitable to discard numerous jigs. In others where new products are in the design stage, the spacer operations were laid out and work was quickly put into production, without the usual delay required in jig design and jig fabrication.



*Bullard Spacer with a 32" x 40" table has 30" longitudinal and 20" transverse travels providing for a maximum of 260 hole locations in a single setting of the stops. Write for complete specifications.*



**THE BULLARD COMPANY**  
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44000	26
43000	25
42000	24
41000	23
40000	22
39000	21
38000	20
37000	19
36000	18

Octo

# ELECTROMET Data Sheet

A Digest of the Production, Properties, and Uses of Steels and Other Metals

Published by Electro Metallurgical Company, a Division of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N. Y. • In Canada: Electro Metallurgical Company of Canada, Limited, Welland, Ontario

## How Ladle Inoculants Reduce Chill . . . Produce High-Strength, Machinable Iron

One of the most significant developments in the field of cast iron metallurgy during recent years has been the widespread growth of the process of "inoculation" in producing quality metal to strict specifications. Inoculation has been defined as "a process in which an addition is made to molten cast iron for the purpose of altering or modifying the micro-structure of the iron and thereby improving the mechanical and physical properties to a degree not explainable on the basis of the change in composition."\*

Various ladle addition alloys are used for inoculation of cast iron, but there is a wide range in the efficiency and potency of these materials. The 50 per cent and 75 per cent ferrosilicons are mild inoculants, but they are used as ladle additions principally as a means of adjusting the silicon content of cast iron. The 85 per cent and 90 per cent grades of ferrosilicon are much more effective inoculants. Inoculating power is further improved through the use of special inoculating alloys, such as silicon-

manganese-zirconium ("SMZ" alloy) and calcium-silicon.

ELECTROMET produces a number of alloys for inoculation, each of which has specific applications. The graphitizing inoculants are:

"SMZ" Alloy	60-65% silicon 5-7% manganese 5-7% zirconium
Calcium-Silicon	30-33% calcium 60-65% silicon
90% Ferrosilicon	92-95% silicon
85% Ferrosilicon	83-88% silicon
Special Graphitizer	A mixture of ferrosilicon and graphite for special uses.
75% Ferrosilicon	73-78% silicon
50% Ferrosilicon	47-51% silicon

These inoculants are usually added to the molten iron as it leaves the cupola spout, or during transfer from one ladle to another.

### "SMZ" Alloy—An Efficient Inoculant

The benefits of inoculation are obtained largely as the result of rigid control of the structure of the graphite phase of cast iron which has received this treatment. The results of inoculation on the properties of a typical cast iron are demonstrated by the accompanying illustrations showing the effect of adding various amounts of "SMZ" alloy.

#### Effects of Inoculation

The effects of graphitizing inoculants are: a drastic decrease in the chilling tendency of a given iron, a mild decrease in Brinell hardness, lowering of

Fig. 1—These curves show how additions of "SMZ" alloy reduce depth of chill and improve mechanical properties when added to a series of irons selected to give the following final analysis: 3.10 total carbon, 1.80 silicon, and 0.50 manganese.

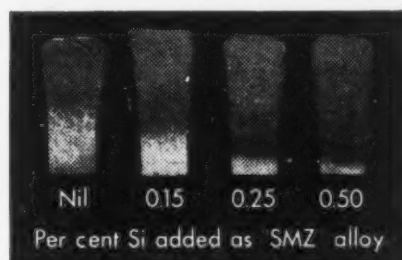
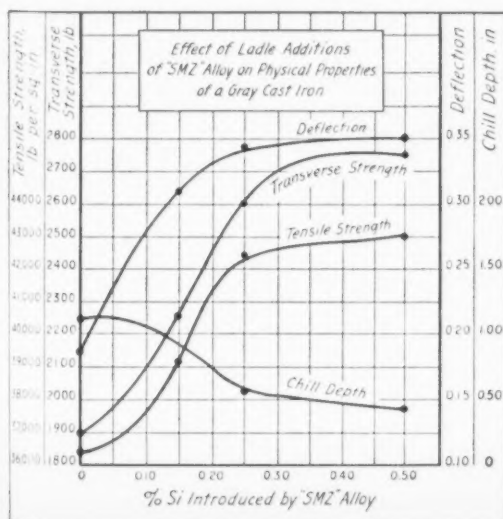


Fig. 2—These chill blocks show how progressive additions of "SMZ" alloy reduce the depth of chill.

the section sensitivity of the metal, a definite increase in tensile strength, and an increase in transverse strength and deflection. These benefits are usually accompanied by improved fluidity, better castability, and improved resistance to wear.

### New Stabilizing Inoculant

For the production of cast iron, ELECTROMET developed recently a special low-carbon foundry ferrochrome. This silicon-chromium alloy is so balanced in composition that it increases the strength and hardness of gray iron, without increasing chill. The new alloy has a nominal analysis of 30 per cent silicon and 50 per cent chromium. It has excellent solubility in iron, and the inoculating effect of the silicon content makes it possible to add up to 1 per cent chromium to gray iron as a ladle addition, with no appreciable increase in chill. Castings treated with the new alloy have an excellent balance between machinability and good resistance to wear.

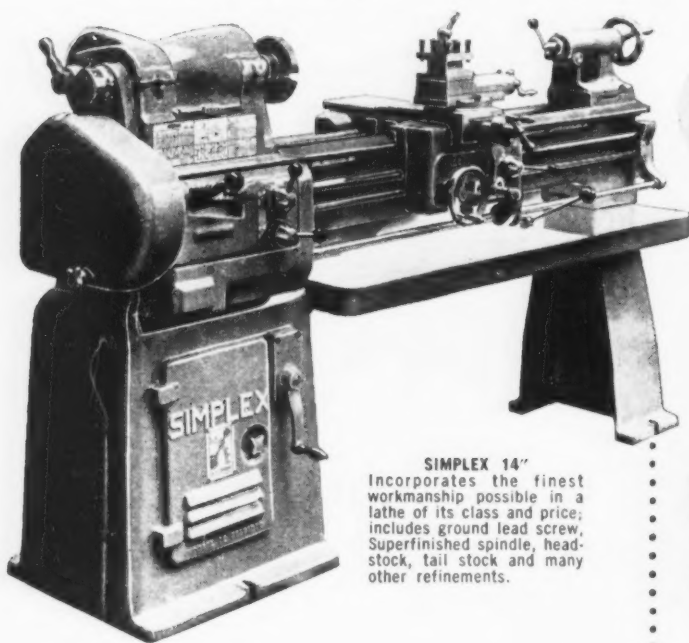
### Booklets Available

Further information about ladle inoculants is given in the booklets, "SMZ Alloy and Its Uses as a Ladle Addition to Cast Iron" and "Silicon-Chromium Alloy in Complicated Iron Castings." You may obtain copies, free of charge, by writing or phoning to the address given above or to the nearest ELECTROMET office: in Birmingham, Chicago, Cleveland, Detroit, Los Angeles, New York, Pittsburgh, or San Francisco. In Canada: Welland, Ontario.



The terms "EM," "Electromet," and "SMZ" are registered trade-marks of Union Carbide and Carbon Corporation.

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Incorporates the finest workmanship possible in a lathe of its class and price; includes ground lead screw, Superfinished spindle, headstock, tail stock and many other refinements.

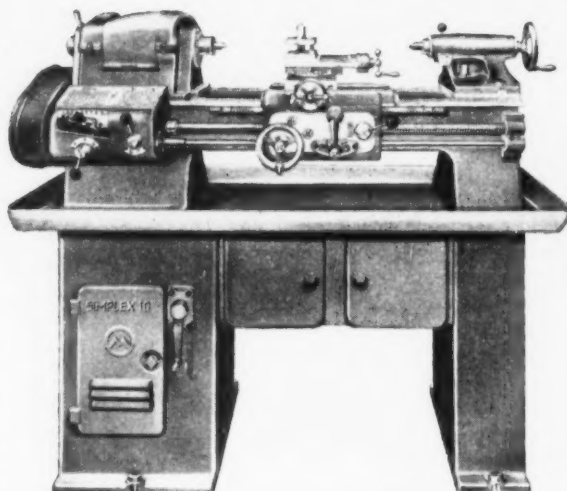
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All machines come with ground lead screw, complete range of American Standard threads, quick change gear box, spline shafts, heavily constructed and well ribbed to guarantee minimum vibration.

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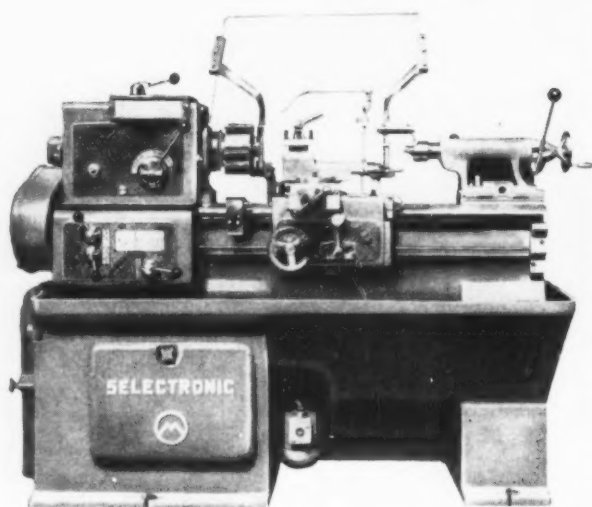
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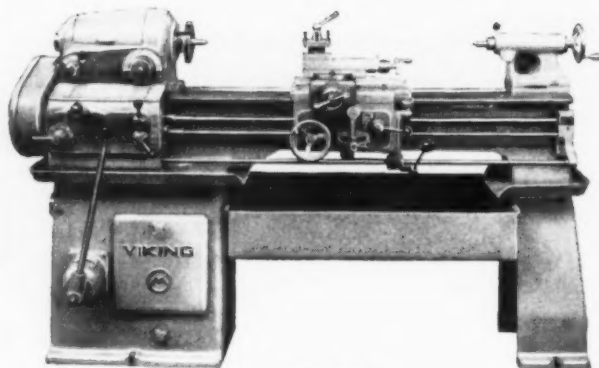
**SIMPLEX 10"**  
Made in 10" x 20" only. It features friction ball bearing spindle.

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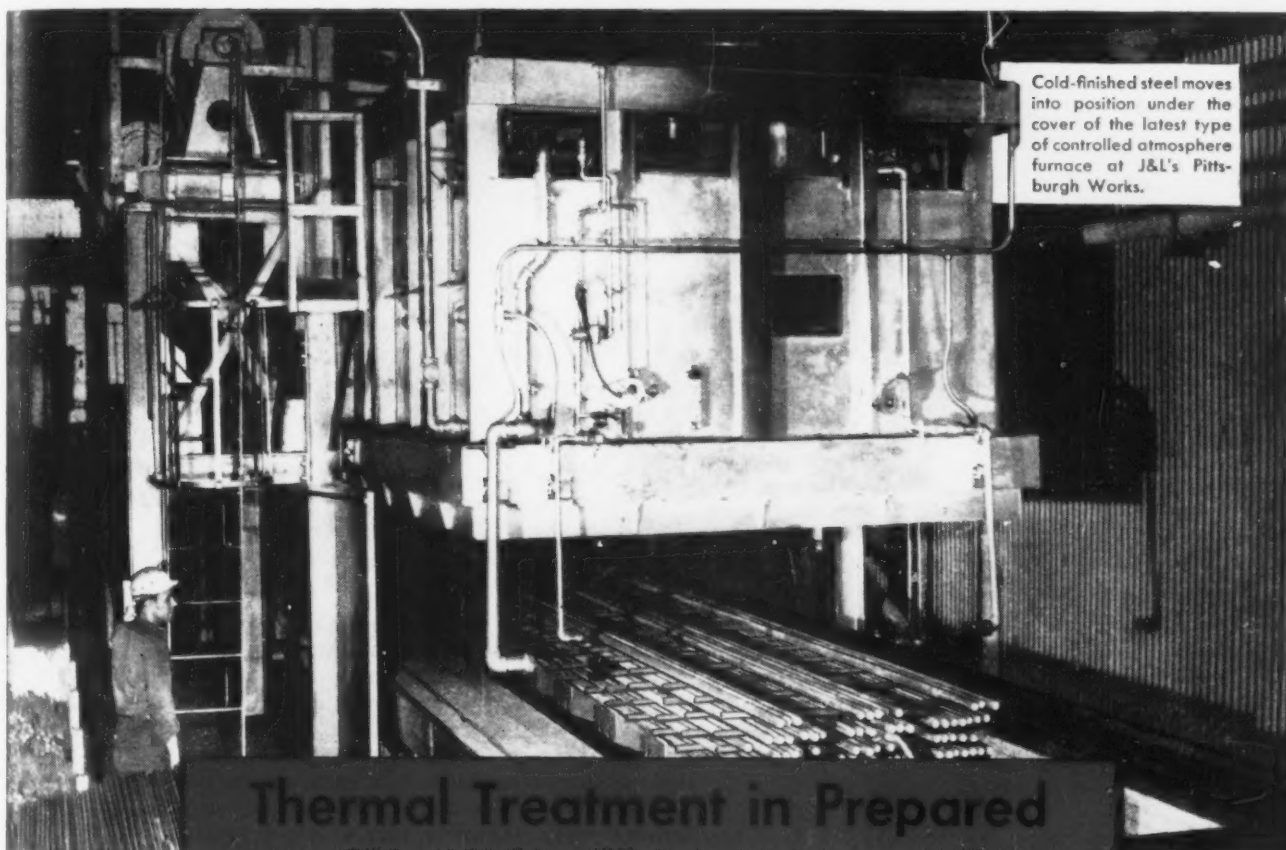


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**I**T CAN HAPPEN with machines as well as men. Ask the Powers Regulator Company of Skokie, Ill.—manufacturer of automatic temperature and humidity control systems.

Powers Regulator, like many companies these days, was faced with the necessity of increasing production of a battery of turret lathes, some of which needed replacement. They also wanted to call in some of their subcontracted work. So they bought a Warner & Swasey 1-AC Single Spindle Automatic to

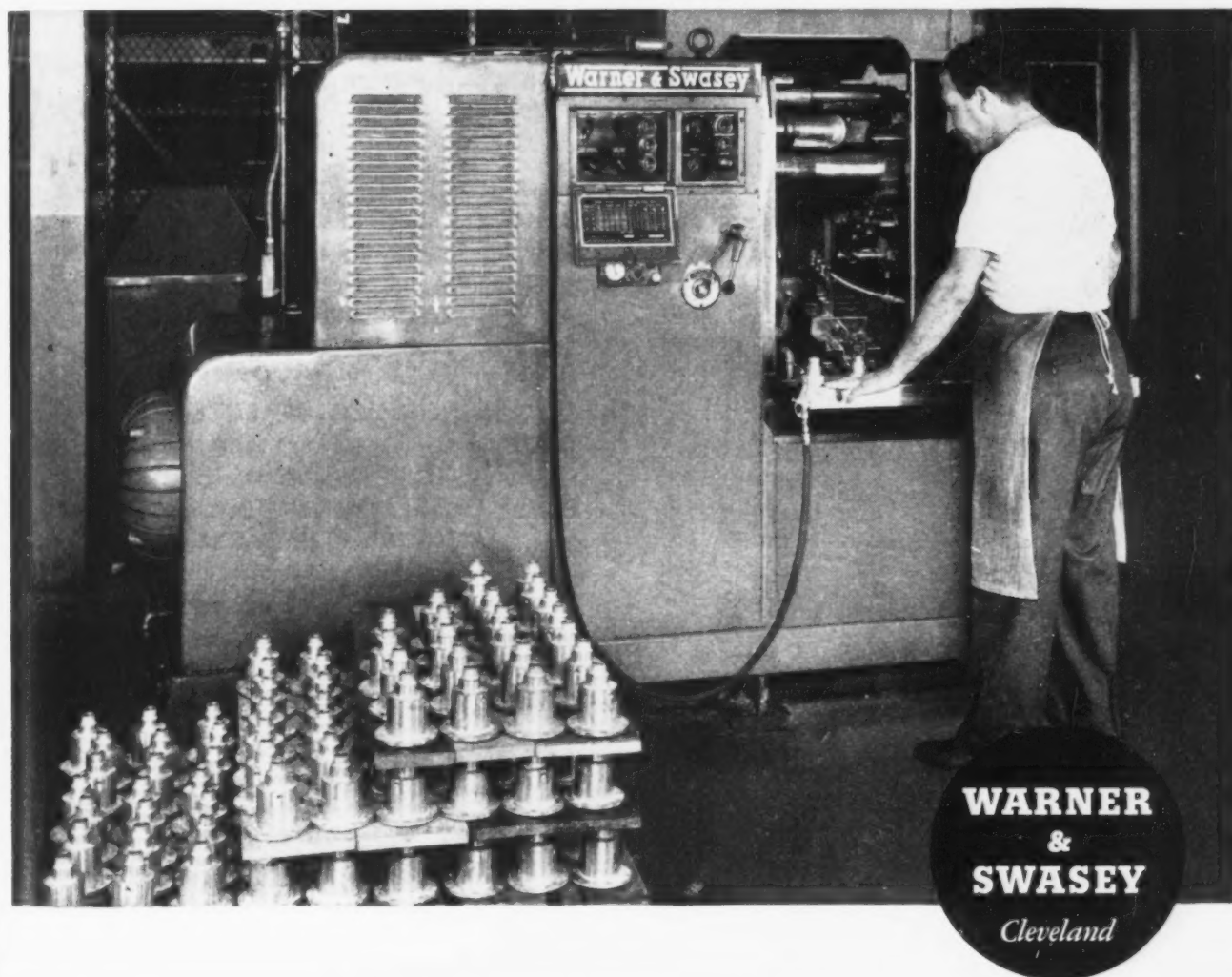
help take the pressure off their hand-operated machines.

This company soon discovered that they had never fully realized the tremendous work potential of the 1-AC. It kept taking over more and more turret lathe work—increasing the production on some of the more complex pieces as much as three times. So the company scheduled the 1-AC for additional shifts—still more work.

Today the machine is running three 8-hour shifts, 6 days a week. It has eased the load on the turret

lathes—and the company has recovered work previously subcontracted. They now have another 1-AC on order.

This story is not unusual. The 1-AC's quick setup and extreme accuracy make it ideal for increasing production on many turret lathe jobs—while requiring less skilled operators. And its advantages as an automatic cuts costs on short and long run jobs. But find out how the 1-AC will boost profits in your plant—call in our nearest Field Engineer for all the facts.

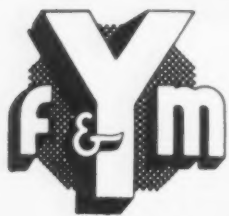


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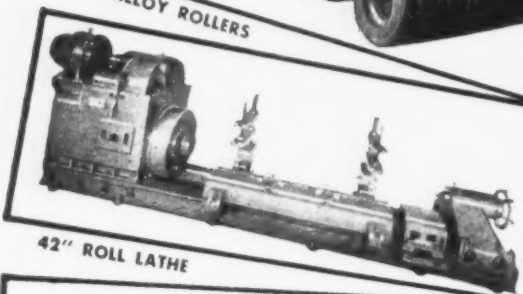


# EQUIPS THE NATION'S STEEL MILLS to Speed Production

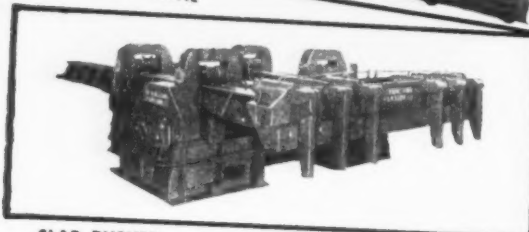
**MACHINES, EQUIPMENT,  
ROLLS AND CASTINGS**



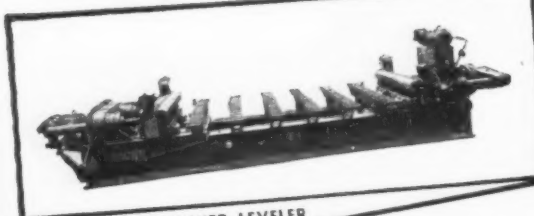
PARALLOY ROLLERS



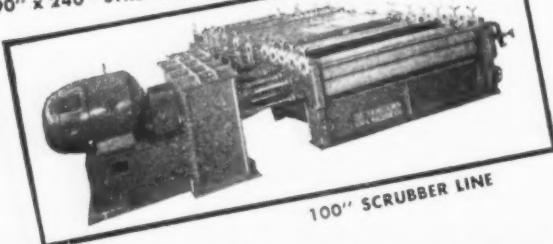
42" ROLL LATHE



SLAB PUSHER



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100" SCRUBBER LINE

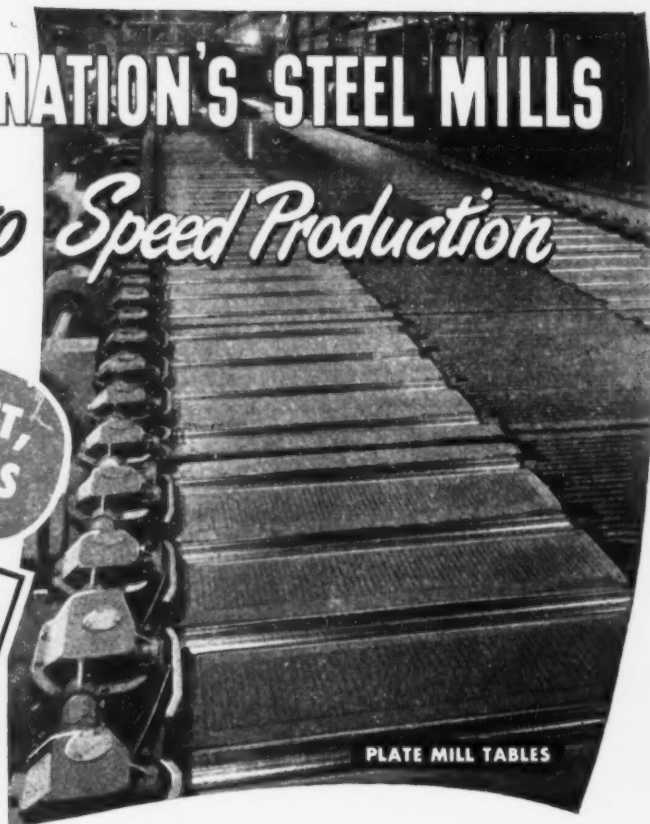


PLATE MILL TABLES

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- ▶ HYDRAULIC SLAB AND BILLET PILERS
- ▶ STRIP AND SHEET OILING EQUIPMENT
- ▶ SHEET SCRUBBER AND CLEANING LINES
- ▶ HOT SAWS—ROCKING AND SLIDE TYPES
- ▶ HOT BEDS—COOLING BEDS—TRANSFERS
- ▶ BILLET EJECTORS—PINCH ROLL STANDS
- ▶ SLITTERS—SPECIAL SHEARS AND GAUGES
- ▶ TILTING TABLES—Traveling and Lifting Tables
- ▶ Continuous PICKLING Lines—ROLLER LEVELERS
- ▶ FURNACE Charging Equipment—Furnace Pushers
- ▶ Strip Steel COILERS and REELS—SCRAP BALLERS
- ▶ RAILROAD Spike Forming Machines—ROLL LATHES
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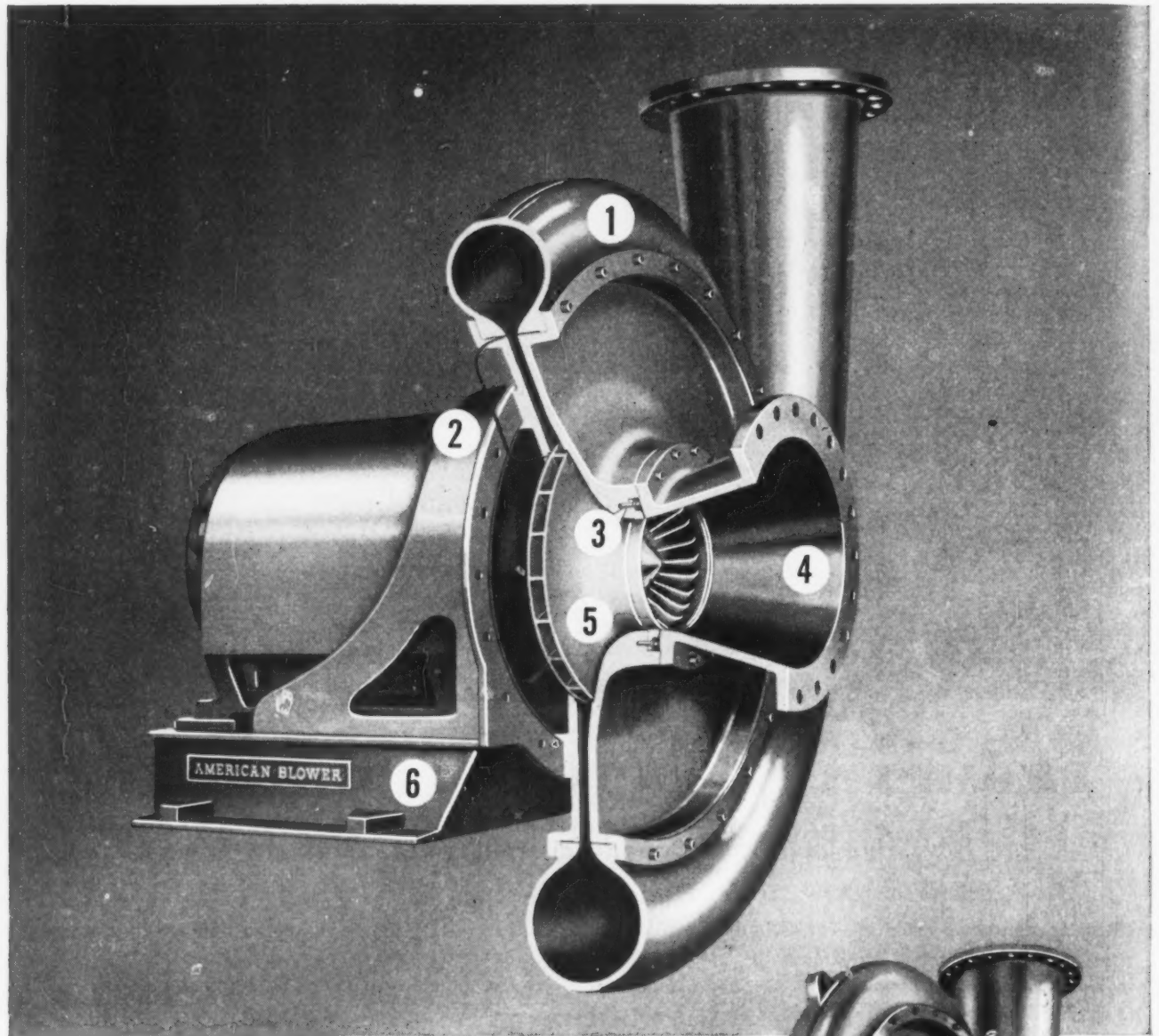
Cable address: ALIMPORT

Rua Da Quitanda 96, Sao Paulo

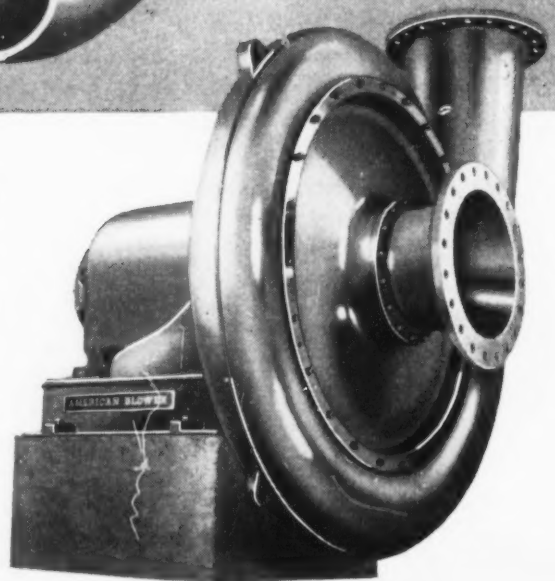
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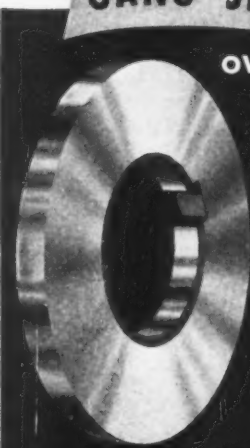
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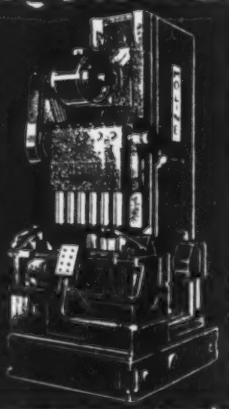
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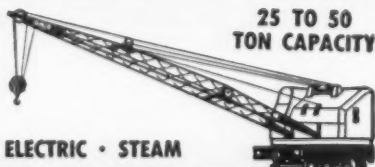


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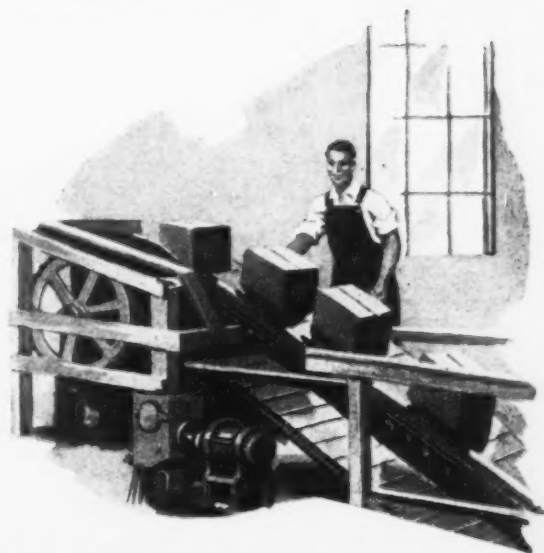
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But, the complete Chain Belt line of conveyor chains can cut costs, improve production, turn over inventories faster wherever your handling problem involves continuous product movement.

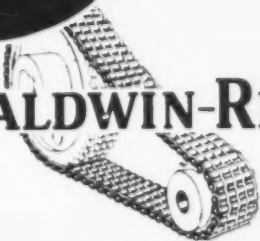
Chain conveyors have many advantages. They can be run in any direction, horizontally, vertically, up and down inclines, around curves. They often eliminate the need for wide material movement aisles. They assure a continuous flow of materials along assembly lines. They materially shorten production time per unit and eliminate costly waiting time which usually results from an irregular material flow.



In the complete Chain Belt Company line of conveyor chains and attachments, there is a size and type that will exactly suit your needs. And, for handling ideas and suggestions on the use of chain conveyors, send for your copy of the informative booklet "Build Profits by Cutting Handling Costs." Chain Belt Company, 4755 West Greenfield Ave., Milwaukee 1, Wisconsin.



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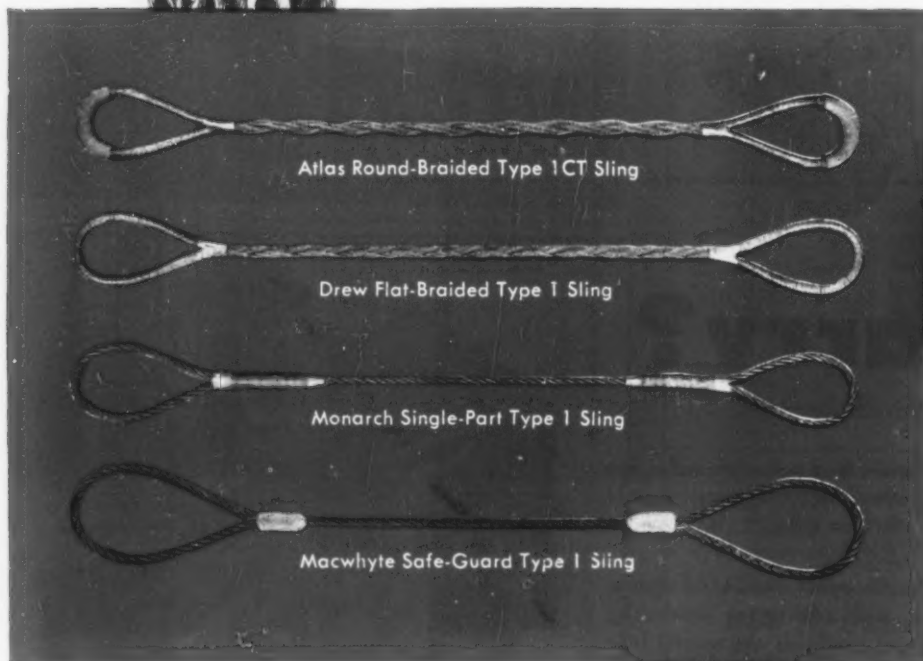
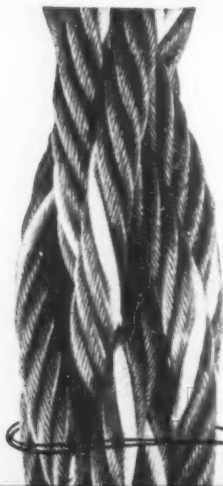
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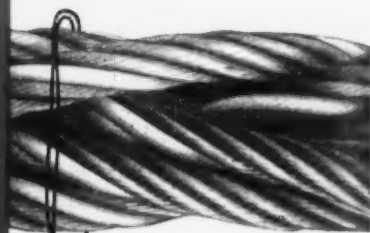


Atlas Round-Braided Type 1CT Sling

Drew Flat-Braided Type 1 Sling

Monarch Single-Part Type 1 Sling

Macwhyte Safe-Guard Type 1 Sling



**MACWHYTE  
COMPANY**  
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Send today for complete sling catalog  
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## THE IRON AGE Newsfront

► After 2½ years of engineering development, a West Coast firm is producing irrigation tubing by welding aluminum strip. After strip is formed into tubular shape, edges are fusion welded by electric arc. Chemical reaction is prevented by introduction of an inert gas.

► Boost in domestic iron ore prices comes at a time when Quebec-Labrador and Venezuelan ore developments are moving closer to completion. Higher domestic prices mean a better competitive position for Canadian and South American ores.

► Most regrettable development in the competitive automotive race today, in the opinion of many car owners, is the horsepower race. Safety engineers and proponents of fuel conservation also find the gain in horsepower a nightmare.

Current high interest in foreign cars is causing automotive stylists to pause. U. S. car styling has actually changed very little since first postwar cars were introduced.

► Military setasides, in some instances, are already becoming available for civilian use. In some areas, as much as 30 pct of the setasides is being retained in the mill in the absence of rated consumers. Despite this, steel plates, structurals or bars will not be in easy supply in the first quarter of next year.

► Countrywide figures do not show the seriousness of manpower shortages in some areas. Many large companies have put up new additions far from the home plant. Help is scarce, competition keen. Professional workers look closely at starting rates, prefer rural communities close to big cities. Others change jobs frequently for higher rates and fringe benefits. Coming of new plants tightens the labor picture for established plants.

Locating an industrial plant in a small community is no advantage from standpoint of wage rates. Rates of pay in rural and semi-rural areas are comparable with those in metropolitan areas, survey by one large manufacturing concern has found.

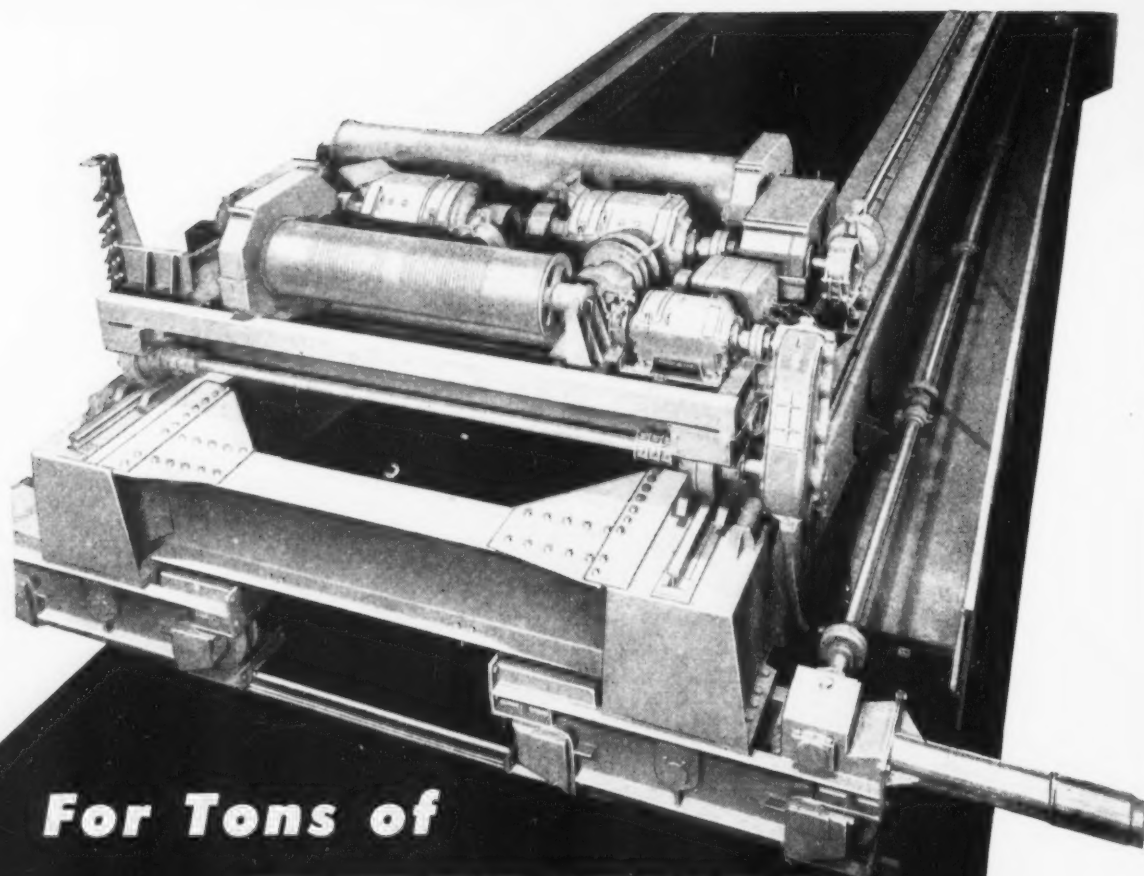
► Best bet for an atomic reactor that can produce economical electric power appears to be the breeder type. Even that doesn't look too good for at least another 5 years. At that time, there may be pilot plant operations.

► Production has just begun of a rare earth alloy containing only 0.25 pct iron maximum. Until now, 1 pct Fe was the lowest commercially available. This addition agent will be used in non-ferrous metals where iron is an undesirable contaminant.

► Titanium sheets are being tested by two chemical companies as liners for autoclaves. The titanium is used to replace monel and stainless ordinarily employed for this service which involves temperatures as high as 800° F at pressures up to 10,000 psi.

► A tube-coating method developed by the Navy will have important applications in nuclear physics, optics, electricity. Used in Geiger-Mueller counter tubes for example, it offers longer life, replaces copper or stainless steel.

► One researcher has come up with tool life studies showing the application of water soluble oil emulsion to carbide milling of steel by conventional methods does not always prolong tool life. Complete flooding of tool and workpiece showed poorest performance.



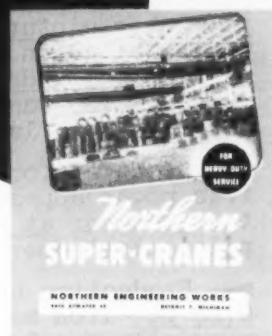
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# Reynolds ALUMINUM REPORTER

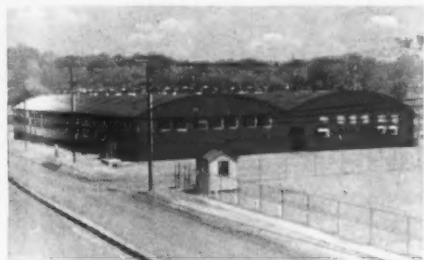
★ ★ ★ Eleventh in a Series to Industry on Aluminum Uses and Developments ★ ★ ★

## ALUMINUM SPECIFIED IN NEW TRAILER DESIGN

### Butler Aluminum Buildings Considered Wise Investment By Satisfied Owners

Aluminum buildings are enjoying wide popularity in all sections of the country. Proof of this is found in the large scale operations of the Butler Manufacturing Company...manufacturer of a wide variety of pre-fabricated buildings for industrial, farm and commercial use...and a user of Reynolds Aluminum.

Illustrated below is one of the many types of aluminum buildings produced by the Butler Company of Kansas City, Missouri.



This is a 120' x 260' x 14' (multiple 60') building that houses the engineering office of a well known maker of battery plate separators. A similar building, 120' x 260' x 20' is used for manufacturing and warehousing by the same company. Like other owners of Butler engineered buildings, this manufacturer reports complete satisfaction with the aluminum roofing and siding.

Owners of Butler aluminum buildings say they are durable, rustproof, never need painting and require very little maintenance. Occupants also mention that aluminum buildings are more comfortable both in hot and cold weather, because the aluminum so effectively reflects away sun's rays in summer and retains inside heat in winter.

How can the durable, heat reflecting, rust-proof, low maintenance qualities of aluminum improve your products? Send for the complete index of Reynolds literature covering all phases of design and fabrication. And, if yours is an architectural application, ask for the Architectural Aluminum Folio. Please request on business letterhead, otherwise the price is one dollar. Write Reynolds Metals Co., 2576 South Third Street, Louisville 1, Kentucky.

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### Choice Of Aluminum Pays Dividends In Performance

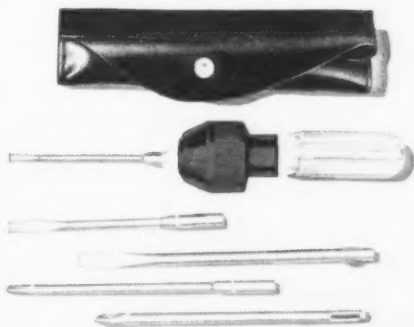


The Model 130 Tobey Flexi-Truck shown above, illustrates another case where leading design engineers are employing special aluminum extrusions, standard structurals, sheet, castings and other forms of aluminum in new and improved designs.

### Aluminum Chuck Offers Definite Advantages in New Screwdriver Kit

This inexpensive Screwdriver Kit is a good example of designing for the best use of each material. Five interchangeable screwdriver blades are steel. The handle is plastic. An all aluminum chuck securely joins handle and blades—provides five screwdrivers in a compact carrying case.

The manufacturer states: "Here are the four basic reasons for using aluminum in the screwdriver chuck: 1. The superior machining qualities of aluminum. 2. Rust protection without special finishes. 3. Positive spring and tension action. 4. Aluminum helped reduce weight.



The Screwdriver Kit is made by Schneider and Shier, Inc., 6457 N. Sheridan Road, Chicago, Ill., prominent manufacturers and distributors of premium promotion items.

In this airline baggage trailer, aluminum structurals and extrusions are used for the bed frame, ends and side gates. The wheels as well as corners for the bed and end frames are aluminum castings. End panels are aluminum sheet and the front hitch is bolted to a structure made of aluminum angle and plate.

The Model 130 is conservatively rated at 3,000 pounds load capacity at 20 miles per hour and, thanks to aluminum, weighs only 130 pounds (approximately). Three empty Flexi-Trucks weigh less than one empty steel trailer of the same size and capacity. Thus more pay load per trailer can be moved safely, with less effort and at higher speeds.

The Flexi-Truck is made by the Tobey Manufacturing Corporation, El Segundo, California, leading designers and manufacturers of light weight, heavy duty material handling equipment. The manufacturer says, "Good construction combined with light, strong resilient aluminum offers warehousemen and material handlers substantial savings through easier operation, greater strength, corrosion resistance, and a durability not to be found in equipment constructed from other materials."

To get similar advantages in your products have a Reynolds Aluminum Specialist work with you on new or redesign problems. This assistance is yours without obligation through the Reynolds office or distributor listed under "Aluminum" in your classified telephone directory. Or, if you prefer, write direct.

For a free copy of the 130 page, 6" x 9" Aluminum Structural Design handbook, and a complete index of other Reynolds literature, write on business letterhead (otherwise price is \$1.00) to Reynolds Metals Company, 2576 South Third Street, Louisville 1, Kentucky.

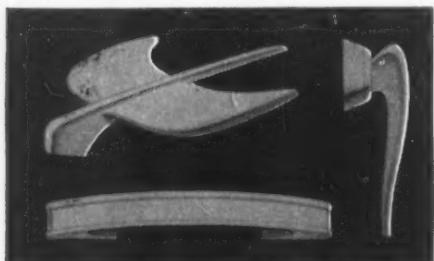
**MORE INTERESTING NEWS ABOUT ALUMINUM ON NEXT PAGE**

(Advertisement)

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## Baked-on Aluminum Finishes Proving Popular for Nickel and Chrome Replacement

Manufacturers of industrial finishes have developed a baked aluminum finish as a replacement for more expensive nickel and chrome plating, and for other protective and decorative applications. The new finish has good adhesion, is durable and resists salt spray from 250 to 400 hours.



*Automotive and Appliance Ornamentation Offers Wide Potential for New Finish.*

While each manufacturer varies the process, the same basic procedures usually apply for this new "laminated" aluminum finish. Metal parts are sprayed first with a synthetic high resin primer, then with a slurry of aluminum paste in a special vehicle. Tiny aluminum flakes rise to the surface and are baked in position. Next the parts are sprayed with a clear synthetic lacquer and again baked. The final finish is a virtually solid sheet of aluminum, bake-laminated between two layers of synthetic resin—a tough, attractive, satin lustre finish.

It also is possible to add transparent colors to the final lacquer coat for special decorative effects. In that respect this new finish provides a fresh approach to many old finishing problems.

For the names of manufacturers of this new industrial finish write to Reynolds Metals Company, 2576 South Third Street, Louisville 1, Kentucky.



## What Is Industry's Biggest Headache?

Did you know that, according to authorities, corrosion is today's biggest headache in industry? Corrosion clips industry to the tune of five and one-half billion dollars a year—seven times more than the annual fire losses in the United States. This is just one of the many reasons why more and more corrosion-resistant aluminum is being specified today to help relieve this costly industrial headache.

Printed in U.S.A.

## Volume Producers Benefit With Roll-Formed Aluminum Shapes From Reynolds

Basic structural parts or parts for decorative or functional trim can be quickly and economically roll-formed for your products by Reynolds Parts Division. Many hundreds of standard roll-formed shapes are available without tooling cost thanks to Reynolds tremendous tooling investment. Tooling for special shapes can also be supplied by Reynolds or work can be produced from your rolls on Reynolds roll-form equipment.

## Aluminum Keeps Pace With Modern Trend in Office Furnishings and Equipment

It's easier today to make your office more attractive, more comfortable and a more efficient place in which to work, thanks to the wide range of smartly designed, functional furnishings made by progressive manufacturers like the Cramer Posture Chair Company, Inc., Kansas City, Missouri. More and more leading manufacturers are using Reynolds Aluminum in their products and here's why, in Cramer's case, according to J. A. Lang, Sales Manager.

Mr. Lang says, "We went into aluminum for our chairs to keep pace with the modern trend in the office equipment field. Aluminum offers eye appeal and light weight. We use aluminum in three forms...ingot, tube and sheet."

The Cramer Posture Chair Company manufactures a complete line of lightweight, precision aluminum constructed chairs in satin aluminum or baked enamel finishes. Aluminum is also used in their big line of metal stands, ladders, filing stools, utility stools, medical and hospital stools and other well-known products.

Marsh Steel Corporation, a Reynolds distributor in North Kansas City, Mo., Denver and Colorado Springs serves Cramer Posture Chair Co. with Reynolds Aluminum.

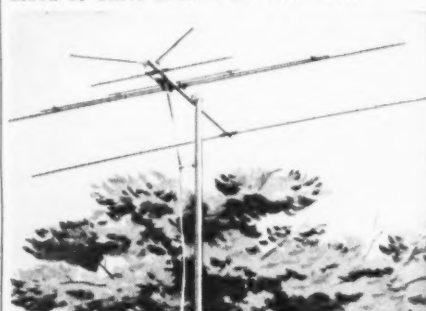


## "Aluminum Powders and Pastes" Handbook Offered

Information on various types of aluminum powders and pastes, their characteristics, controls and use in industry is found in the "Aluminum Powders and Pastes" handbook aptly subtitled, "The Tale Of The Powdered Pig". This 84-page illustrated book discusses applications in paints, plastics, textiles, pyrotechnics, chemical processing, powder metallurgy, medicine, and miscellaneous uses.

For your free copy of this handbook, plus a complete index of Reynolds technical literature, write on business letterhead (otherwise price is \$1.00) to Reynolds Metals Company, 2576 So. Third St., Louisville 1, Kentucky.

Aluminum and roll-forming combine to offer the important benefits of strong, light, uniform shapes that are easily and economically bent, welded, assembled and generally fabricated. Aluminum can be cold roll-formed to close tolerances for your individual product requirements. Natural, embossed, anodized or other finishes are available.

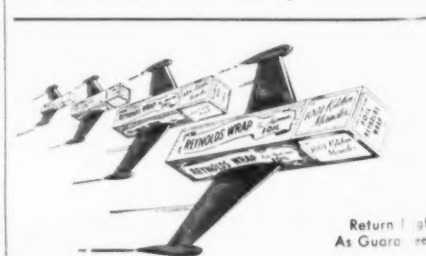


*Butt-seam and lock-seam tubing, roll-formed by Reynolds, is widely used in TV antennae.*

Whether you make bicycles or baby carriages, metal furniture or fences, television antennae or trucks, window sections or washing machines...these and thousands of other products can be produced faster and cheaper in volume by using roll-formed aluminum shapes from Reynolds.

In this connection, it's important to remember that Reynolds Parts Division offers one of the country's most complete facilities for aluminum fabricating in general and includes equipment for shearing, blanking, riveting, welding, forming, finishing and assembly in addition to roll-forming. Reynolds tremendous equipment investment includes hydraulic presses from 300 to 5000 tons, over 100 mechanical presses ranging from 2 to 1700 tons and other big capacity equipment for turning out quality work in large volume.

For complete information on how the Reynolds Parts Fabricating Service can help you or for assistance on your particular requirements, call the Reynolds office listed under "Aluminum" in your classified telephone directory or write Reynolds Metals Company, Parts Division, 2065 South Ninth Street, Louisville 1, Kentucky



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# IRON POWDER: Use Grows, Output Spurts

**All producers boosting capacity as military, civilian use climbs . . . No shortage yet, none in sight . . . Technology progressing . . . Industry, consumers confident—By R. L. Hatschek.**

Expansion is hardly an adequate word to describe the rate of growth that is coming in iron powder production. The industry isn't adding — it's multiplying. Every producer in the business is increasing his capacity to make powder, and doing it with private capital.

Powder people are making sure that no one will be able to cite poor availability as a reason for not going to this means of fabrication. As an example, one producer is currently building a plant in the East which will have an annual capacity of 28,000 tons of iron powder. Initial production is scheduled for early in 1953.

Compare this expansion of a single producer with the entire supply of iron powder available to U. S. consumers in the peak year of 1951. That supply was 15,600 tons from all sources and there was no shortage then or at any time since then.

**Need More**—Some fabricators feel that 25,000 tons of powder a year would be sufficient for the near future. But executives in the production end of the industry are convinced that 50,000 tons annually would not represent an oversupply by the end of next year.

Iron powder business is definitely on the upswing again. Record-high in 1951, business fell off somewhat this year. Reason was that the Controlled Materials Plan cut off much of the metal required for other components, thus reducing demand for iron powder which was and still is plentiful. The steel strike had the same effect.

Suppliers report more incoming

orders during the past month than any of the last six—and things look brighter than they have all year. Imports, the major source of the material, totaled approximately 12,000 tons last year but dropped to an average of only 275 tons a month for the first 7 months of 1952. Now they're coming back with a bang and top any for the past 10 months.

Prime factor in the present climb of demand is increased use for civilian consumer goods and military buying. Industry people anticipate even further increases in both.

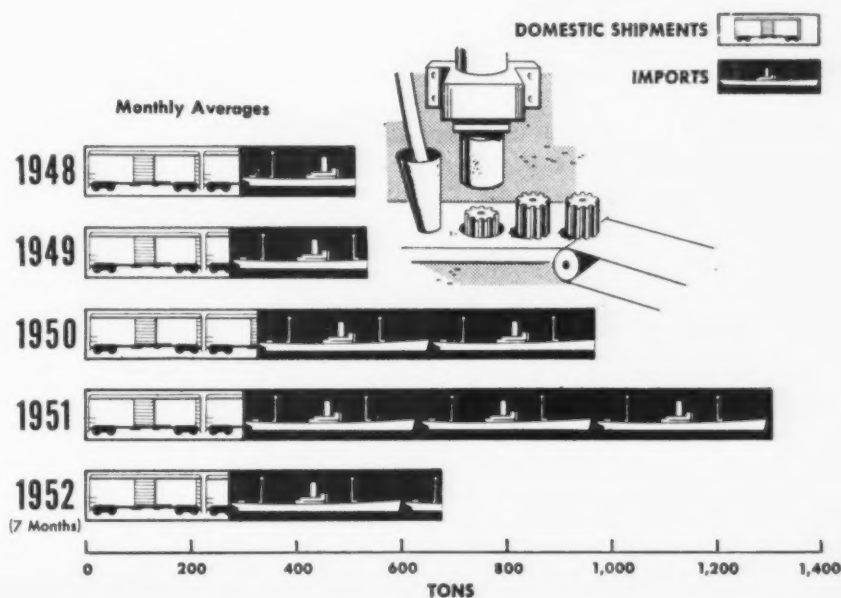
**Military Uses**—Ordnance Dept. is taking its time, making thorough investigation before stamping "approved" on parts made with powder. But they are accepting them. Iron powder rotating bands for hyper-velocity projectiles are

already in production but general adoption of them for other type shells is slow. Many other parts made of iron and other metal powders are in use by the Armed Forces.

One of the reasons the Army is moving slowly on its iron powder ammunition programs is that the adoption of steel shell cases has already saved a tremendous quantity of copper and the amount of copper in rotating bands is relatively small. These programs are continuing, however. Experiments with .50 cal. steel cartridge cases drawn from sintered cups at the Frankford Arsenal appear very favorable. Complete 20 mm practice projectiles made of powder are on the way. Experiments and testing of ball ammunition produced from iron powder are being conducted.

But long term confidence of the metal powder producers is not based on military needs. Rather, its basis lies in expansion of powder metallurgy and parts fabrication along civilian lines. And the

## U. S. Iron Powder Supply



## NEW ENGLAND: How to Spur Industry

**Research study seeks solid path of industrial progress for area . . . Lists potential in new markets, products, processes, atom power . . . Industry-by-industry list—By W. V. Packard.**

Last week Arthur D. Little handed its client, Federal Reserve Bank of Boston, a 4 lb 7 oz. research "baby" with the hope that "this puny child would grow into an industrial giant."

The prominent Cambridge research firm had been retained to discover (1) new markets for products now made in New England,

(2) opportunities for introducing newly developed products, and (3) opportunities for establishing new industries suitable for the area.

Their conclusions and recommendations, aside from being interesting, will be of help to industrial firms wishing to appraise this 6-state area. They will also be used as a base for continuing research into some of the more intriguing economic possibilities.

### Guideposts to Opportunities

Here are some rules of thumb recommended in looking for industrial opportunities in New England. Best opportunities are likely to be found in products satisfying one or more of these requirements:

- (1) Need for Skilled Labor
- (2) High Value Added
- (3) Small Bulk
- (4) Unique or Specialty Product
- (5) Need Management Ingenuity
- (6) Based on Local Market
- (7) Origin in Technical Research
- (8) Materials Base in Region, Eastern Canada, or Overseas

**Cement Plant**—Maine being the only producer, the region must import an annual deficit of almost 7 million bbl of cement. Much of this comes from the Lehigh Valley and New York. Adequate deposits of limestone are at tidewater. Fuel costs would be higher for a NE cement mill. But this is more than offset by potential freight savings. It is estimated that a local producer would enjoy a net advantage of about \$4 per ton over outside competition.

**Electronics** — NE's already strong position in this fast growing industry is due to research and skilled labor and management. Major trends in electronics are toward miniaturization and use

of printed circuits. Use of smaller parts favors more skillful workers—perhaps even watchmakers, of which there are many in the area. Use of printed circuits to make parts cheaper (savings up to 75 pct are reported), smaller and stronger involves techniques which have much in common with processes like etching and silk screen printing used in the graphic arts and textile fields. Such skills are already highly developed in the area.

**Plastics** — Firms in New England turn out one-third of the \$500 million national output of fabricated plastic items; they em-

### More Study Recommended

Encouraging report from Arthur D. Little brought recommendation for further study of these possibilities:

- (1) Cement Plant
- (2) Electronics
- (3) Plastics
- (4) Specialty Steel Plant
- (5) Aluminum Fabrication
- (6) Metal Products, Machinery
- (7) Pharmaceuticals
- (8) Glass Fibers
- (9) Atomic Energy
- (10) Instruments
- (11) Pulp, Paper, Printing

## Special Report

*Continued*

increased use of iron powder components will blanket all industries. There are certain specialized uses where the material is a natural—one of these is its use in electronic cores.

**Advantages**—However, the major demand is expected to come from sinterings. They'll compete with screw machine products, castings, stampings and the like. Besides being able to vary density and porosity of components—

unique to parts made of powder—machining time is frequently reduced or even eliminated and scrap loss is generally cut substantially. Each round of wage increases and each price rise in machine tools tips the scales a bit more toward powder fabrication.

Good purity control in iron powder can contribute to a lower reject rate for finished parts. Impregnation inside and out with resin or paraffin and a coat of paint or lacquer improves corro-

sion resistance of the iron. Parts protected by these methods have withstood 250-hour salt spray tests. This permits the substitution of iron for more expensive nonferrous metals where corrosion resistance is important.

One notable trend is for manufacturers, such as appliance makers, to establish their own powder part making facilities instead of subcontracting the jobs to custom fabricators as in the past. This indicates their confidence.

## Labor

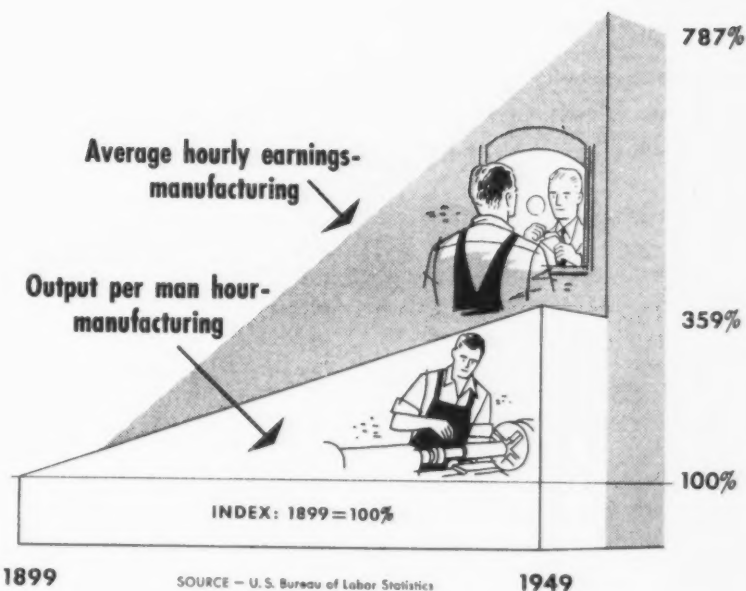
employ one-fourth of the industry total.

**Specialty Steel Plant**—Plan to build a large integrated mill has now been abandoned. It is suggested that a smaller, electric furnace specialty mill would be well suited to the varied needs of the area. A mill of about 140,000 tons annual capacity, using all scrap charge, could satisfy half the region's demand for 122,000 tons of alloy steel bars and shapes and one-fourth of the annual demand for 375,000 tons of carbon bars. Higher power cost would be offset by protection of the freight umbrella. Cost of the mill is placed at \$14 million. Steelmaking cost is estimated at \$71 a ton.

**Aluminum Fabrication**—Power limitation and cost make aluminum reduction unfeasible. But it is recommended that consideration be given to more fabrication of this light metal which will have expanded five-fold in the 12-year period, 1941 to 1953. United Smelting & Aluminum Co., Inc., have scheduled a \$12.9 million aluminum sheet mill for New Haven. Raw aluminum can be brought in from Gulf ports and by rail.

**Metal Products, Machinery**—Metalworking continues to be one of the fastest growing segments of the regional economy. Manufacture of non-electric machinery is second-ranking industry in the area. To keep growing, this industry is urged to exploit its advantages in engineering, research and technical skills. Electronic machinery is cited as an example of growth possibilities. More manufacture of instruments is urged.

**Atomic Energy**—NE research, educational and industrial facilities are already participating in various phases of this program. If atomic power becomes practical a number of industries not now feasible in the area might see mushroom growth. It is strongly recommended that at least one team of NE companies work for commercial development of atomic power,



## Productivity—Joker in Wage Deck

Despite repeated defeats in collective bargaining, management still apparently intends to play a pat hand. If it does, it is likely to see its ace in the hole trumped by a wild card—"productivity." This is the subject of an interesting research volume just completed by Fisher, Rudge & Neblett, management consultants.

Their conclusion is that a national formula of productivity would hamper collective bargaining, create new wage problems and more inflation. But even more startling is their finding that government and management are equally unprepared to use productivity as a factor in wage determination. At the same time they are convinced that the theory is here to stay and that management should explore its consequences and develop techniques and information for negotiating productivity demands.

Contrary to wide belief, there is no official government productivity index, nor is there any other which has gained wide acceptance. Bureau of Labor Statistics kept fragmentary records from 1890 until World War II, when these were suspended. Since 1945, BLS has kept precise records on 2600 companies in a score of industries, but not in major fields such as steel and autos. The BLS figures show great fluctuation among industries and companies.

Union pressure for the productivity factor is based on a privately published index by a Commerce Dept. official (John Kendrick) . . . "the only index which portrays a national trend supporting their contention that productivity should become a determinant in establishing wage policies."

Actually over a long period of time earnings have risen much faster than productivity. For example, from 1890 to 1951, BLS figures show output per man-hour increased 351 pct while average hourly earnings went up 723 pct.

In manufacturing alone output per man-hour rose 259 pct between 1899 and 1949, while average hourly earnings rose 687 pct.

## ATOMS: Electric Power for Industry

**What atomic unit may be used to produce power . . . Why not atom plants now? . . . Facts on fission units . . . Huge sums needed . . . What's profit-making picture?—By K. M. Bennett.**

In September the lid popped off atomic power. At least four authoritative research men indicated publicly that we are on the track of commercial applications of atomic power.

An industrial figure estimated that commercial atomic power might be only 5 years in the future. AEC, more conservative, figured that at least 20 years would be required for any considerable development of fission-produced electric power.

Here, briefly, is some of the evidence that produced those predictions.

**Smaller in Size**—What will be used to produce electric power through the fission of atoms? The atomic power plant, in current theory, would be actually slightly smaller than present day coal burning power plants.

Despite the shielding necessary, the atomic fission unit that would replace the coal fire box and boiler room would occupy less space than the coal burning equipment. The present day electric plant would undergo no changes other than those necessary in the heat and steam producing areas. (See drawing page 41.)

The actual heat producer would probably be a breeder reactor. Such a unit has a core, the actual heat producing center, no larger than a football. It is felt that an economically feasible atomic-electric power plant would have to make and sell plu-

tonium in addition to its power.

With a breeder-reactor, this is possible. U-235 is the expensive and scarce fuel required to operate an atomic "furnace." If this is used up, the fuel cost is high. But if the U-235 is used in conjunction with U-238, the inactive form of uranium, then some of the neutrons escaping from the disintegrating U-235 will combine with the U-238 to produce plutonium, another type of atomic fuel. This is what the physicists have called "operation bootstrap."

A breeder-reactor operates at a much higher rate of fission than the plutonium producing plants we now have. Hence, it creates (1) sufficient heat to generate steam, and (2) captures sufficient neutrons in a U-238 "blanket" around the football-sized core to make more fuel, in this case, plutonium. After an undisclosed period, the blanket could be removed from the pile and the active plutonium removed.

**Fuel Replenishment**—Such a reactor would actually produce fuel

as fuel is burned. Such a reactor has been in operation at Arco, Idaho, since last December, and has been producing sufficient electric current for the needs of the atomic research laboratory there.

The breeder-reactor is not the whole story. Research men are working now with another form, called the homogeneous reactor. Here, the fuel is in liquid form. It is possible that developments here will affect the development of the breeder-reactor.

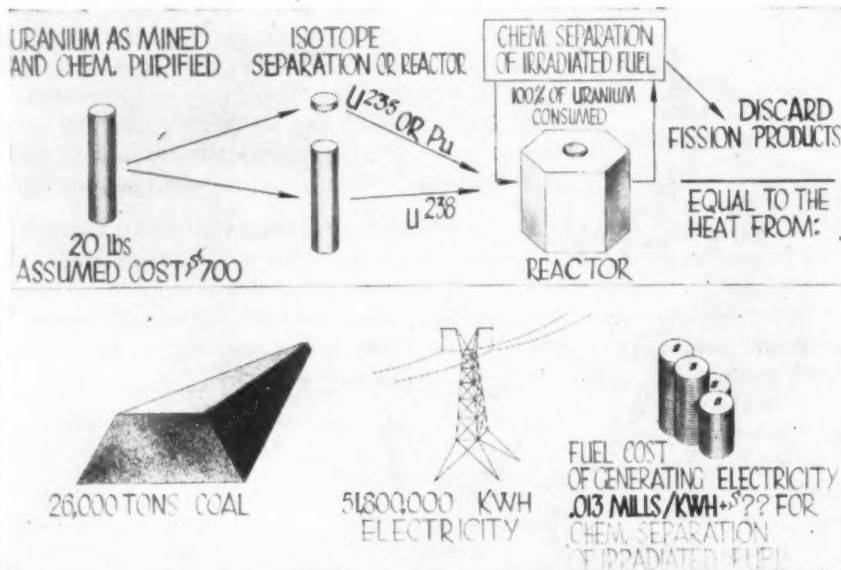
At least two companies, and the AEC, plan to pool \$1 million for development work on a dual purpose breeder-reactor. This would mean a reactor capable of producing both usable heat and plutonium as a by-product.

**Gain 10 Pct**—The breeder reactor can make use of U-233, thorium U-235, and plutonium. It is possible that in the process of fission a breeder could regenerate itself and gain 10 pct in fuel supply as well.

How can a breeder-reactor produce more material than it uses?

Fire one neutron into the "core." It strikes a U-235 atom and that disintegrates, throwing out 2.5 other neutrons. One of these smashes into another U-235 atom and the chain reaction begins as that atom breaks up. Meanwhile, the remaining 1.5 neutrons must bounce outward.

One combines with the inactive U-238 in the core and forms plutonium. The remaining half neutron is usually lost. But in a breeder-reactor, this half neutron is caught in the U-238 blanket around the core, and so produces more plutonium. As a result, a breeder-reactor can replace its own fuel, and produce 10 pct besides. It is hoped



**ECONOMICS:** Breeder reactor breakdown, showing chemical processing.

## Power

that this 10 pct figure can be pushed even higher.

**Why Not Now?**—Then why not atomic electric power plants now?

(1) Considerable study must be done on the systems used to transfer the heat from the violently radioactive core to the steam generating plant. A liquid metal (sodium and potassium) has been used, as well as gas and water under pressure. More experimentation is desirable however.

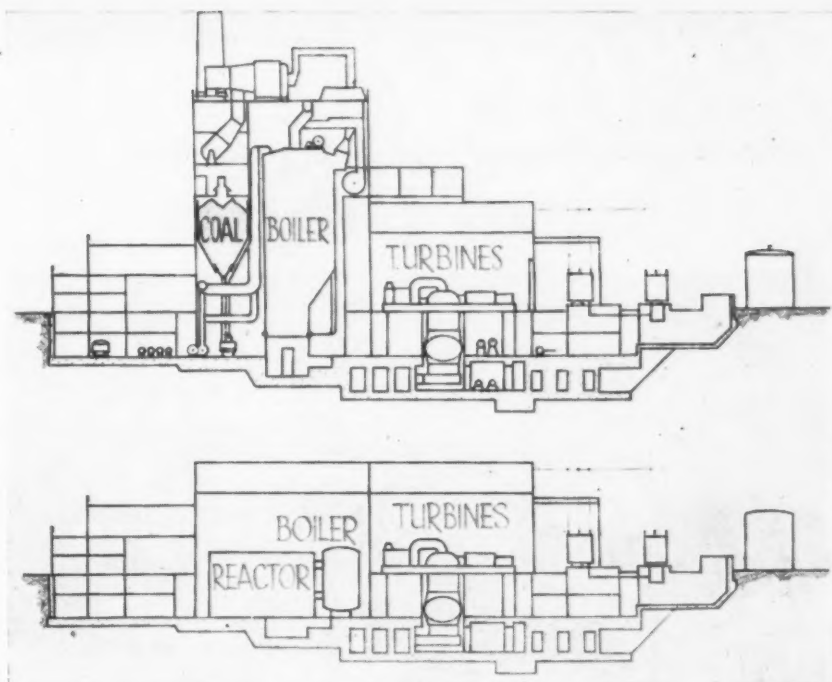
(2) Beryllium, graphite, and zirconium have been used in building reactors, but more research must be done on all of these stable materials used in reactor construction, particularly as in regards to corrosion.

(3) It is necessary to chemically process the reactor fuel at intervals. This to recover usable fuel, and also to remove and store radioactive fission products. The process is expensive.

(4) A nuclear power plant would generate radioactive wastes and by-products. The big plants thus far have been located on large government reservations where space was sufficient to isolate these radioactive products. Since the ideal fission-electric unit would be installed in existing power facilities, waste disposal might be a serious problem.

(5) Costs for installation, even when the above problems had been solved, would be high. And the economic aspect is the largest problem in commercial application of atomic power. For instance, a 20 lb bar of uranium might contain only 0.7 pct fissionable U-235. The rest would be inactive U-238. Before 3.5 pct of the U-235 is destroyed, the fuel must be removed for chemical purification. Otherwise, the fuel would not retain critical size, accumulated fission products would attack the generator and the fuel would lose its physical characteristics.

**Profit Picture**—The capital required to iron out these problems would require more millions than returns could now justify. Atomic



COMPARISON: How coal-burner and fission-type plants may compare as to size.

produced electric power is not "just around the corner," even though at least ten U. S. firms have been attacking the problem over the last year. But it is moving close. Preliminary estimates figure that the plant would have to produce 200,000 kw. The nuclear installation must not exceed \$60,800,000; and

total generating plant cost must not exceed \$80,800,000.

On the basis of power output of any existing reactors, cost of any existing reactors, and in view of the experimentation still necessary, it seems that the economic aspects cannot be solved for some several years yet.

## Production

### IRON & STEEL: August Output By Districts

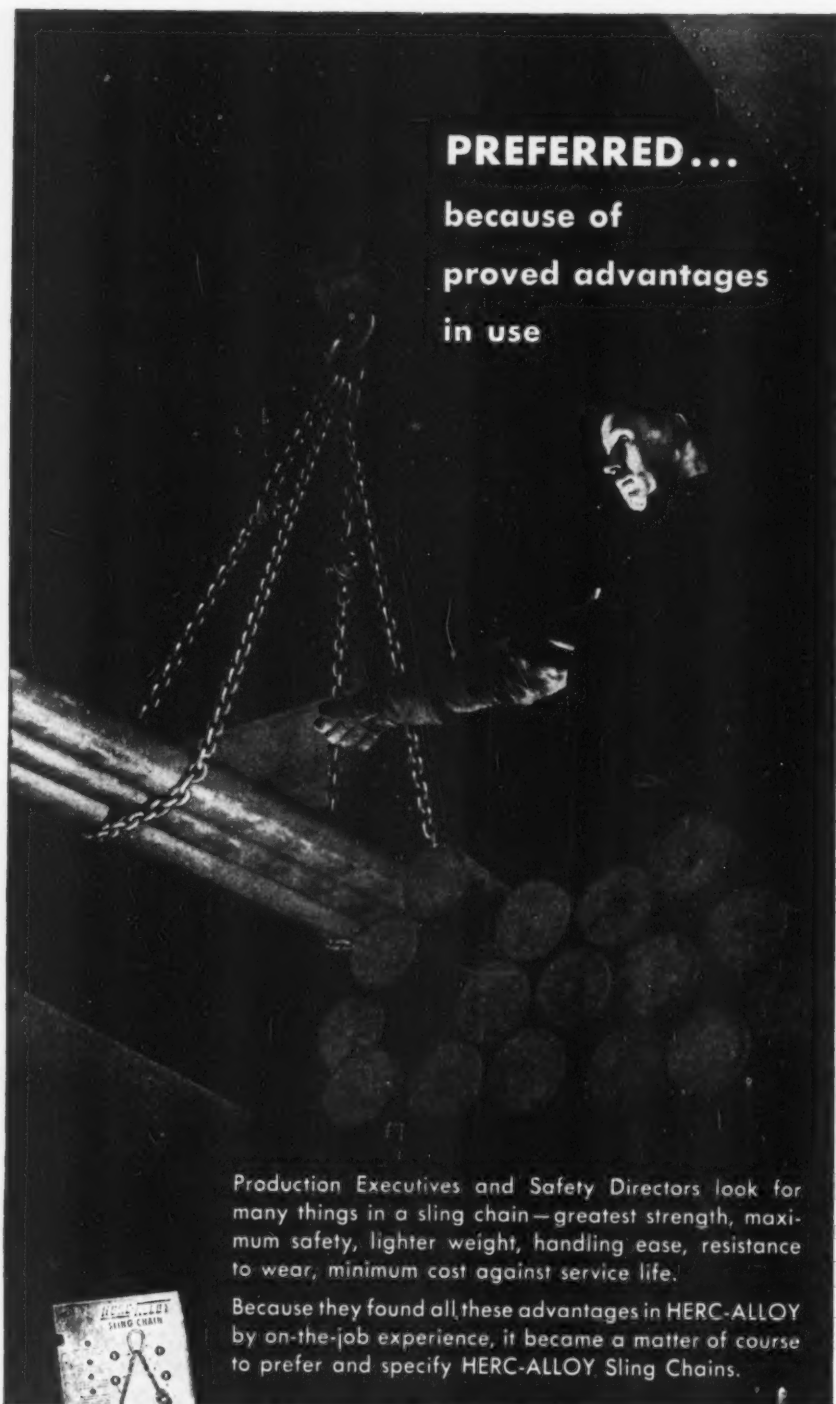
As Reported to the American Iron and Steel Institute

DISTRICTS	BLAST FURNACE —NET TONS	Number of Companies	Annual Capacity	PIG IRON		SPIEGEL FERRO- MANGANESE		TOTAL		Pct of Capacity	
				August	Year to Date	August	Year to Date	August	Year to Date	August	Year to Date
Eastern	12	13,983,580	1,135,475	6,983,622	17,298	166,631	1,152,773	7,150,253	97.3	76.7	
Pitts.-Yngstn.	17	17,468,800	2,090,815	13,424,256	24,732	140,221	2,115,547	13,564,477	90.9	74.1	
Cleve.-Detroit	6	7,501,100	629,218	3,754,903			629,218	3,754,903	99.0	75.1	
Chicago	7	15,703,740	1,196,603	7,497,254			1,196,603	7,497,254	89.9	71.6	
Southern	8	5,648,620	457,686	2,931,058	6,631	36,384	464,317	2,967,442	97.0	78.6	
Western	3	3,476,700	272,299	1,807,982			272,299	1,807,982	92.4	78.0	
Total	35	73,782,340	5,782,096	36,399,075	48,661	343,236	5,830,757	36,742,311	93.3	74.7	

DISTRICTS	STEEL —NET TONS	Number of Companies	Annual Capacity	TOTAL STEEL (Incl. Alloy Steel, Carbon Ingots)		Pct of Capacity		ALLOY STEEL		CARBON INGOTS	
				August	Year to Date	August	Year to Date	August	Year to Date	August	Year to Date
Eastern	23	21,709,870	1,678,841	10,753,166	91.3	74.3	129,109	859,214	371,652	2,228,280	
Pitts.-Yngstn.	33	42,350,760	3,202,235	21,419,617	89.2	75.9	429,321	3,054,126	370,735	2,507,104	
Cleve.-Detroit	8	10,485,380	849,575	5,459,365	95.6	78.1	66,724	399,587	84,536	561,542	
Chicago	15	22,258,500	1,819,239	11,383,787	96.5	76.7	138,438	861,802	282,019	1,741,147	
Southern	11	5,291,260	436,137	2,670,595	97.3	75.7	7,861	41,929	2,340	10,494	
Western	12	6,491,900	512,660	3,471,862	93.2	80.2	8,281	75,986	41,649	251,999	
Total	80	108,587,670	8,498,687	55,156,392	92.4	76.2	779,734	5,292,644	1,152,939	7,300,566	

# HERC-ALLOY

## SLING CHAINS



**PREFERRED...**

because of

**proved advantages**

in use

Production Executives and Safety Directors look for many things in a sling chain—greatest strength, maximum safety, lighter weight, handling ease, resistance to wear, minimum cost against service life.

Because they found all these advantages in HERC-ALLOY by on-the-job experience, it became a matter of course to prefer and specify HERC-ALLOY Sling Chains.



**Write** for illustrated Data Book No. 3 which contains helpful information on sling chain selection and use.

**COLUMBUS MCKINNON CHAIN CORPORATION**  
(Affiliated with Chisholm-Moore Hoist Corp.)

**GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.**

**District Offices: New York • Chicago • Cleveland**

Other Factories at Angola, N. Y., Dixon, Ill., St. Catharines, Ont., Can., and Johannesburg, South Africa.

### Construction

#### Steel Inquiries and Awards

Fabricated steel awards this week:

**1750 Tons**, Extension to Turbine Bldg., General Electric Co., Schenectady, N. Y., through Stone & Webster Engineering Corp., Boston, Mass., to American Bridge Co., Pittsburgh.

**800 Tons**, Tampa, Fla., power station for Tampa Electric Co., through Stone & Webster Engineering Corp., Boston, Mass., to Bristol Iron & Steel Co., Bristol, Va.

**130 Tons**, Grant and Rapides parishes, Louisiana, Red River bridge, Louisiana Highway Dept., to American Bridge Div. of U. S. Steel Co., Birmingham, Ala.

Fabricated steel inquiries this week:

**1160 Tons**, Lowell, Mass., bridge over Merrimac River near Hunt's Falls, F. D. Sabin, Cambridge, Mass., district engineer. Completion date is June 30, 1954.

Reinforcing bar inquiries this week:

**123 Tons**, Lowell, Mass., bridge over Merrimac River near Hunt's Falls, F. D. Sabin, Cambridge, Mass., district engineer. Completion date is June 30, 1954.

#### August Bookings Rise 16 Pct

August bookings of fabricated structural steel, as compiled from reports received by the American Institute of Steel Construction, amounted to 257,773 tons, an increase of 16 pct over the previous month. Total bookings for the first 8 months of 1952 were 1,736,230 tons or at a rate of 217,029 per month.

Shipments during August were 225,013 tons, considerably greater than the previous month and some 4 pct over the monthly rate of 215,477 tons. Shipments for the first 8 months of 1952 totaled 1,723,577 tons.

The backlog of work ahead as of Aug. 31 stands at 2,363,487 tons.

#### Estimated Total Tonnage for the entire industry

CONTRACTS CLOSED	1952	1951	Avg., 1947-1950
Total Tonnage			
January	213,110	361,373	161,976
February	230,832	256,746	152,186
March	226,394	297,517	221,387
April	209,106	337,026	177,825
May	209,888	268,166	176,266
June	167,492	207,966	196,725
July	221,635*	222,540	229,334
August	257,773	212,730	212,899
Totals	1,736,230	2,164,064	1,528,598

#### SHIPMENT

January	244,947	214,000	166,919
February	246,398	193,638	161,170
March	268,840	237,087	191,297
April	230,676	234,095	192,861
May	244,222	234,486	198,126
June	125,486	257,066	192,851
July	138,001*	204,380	183,329
August	225,013	230,915	204,948
Totals	1,723,577	1,811,667	1,491,792

#### TONNAGE OF BACKLOG

2,363,487	2,748,315	1,287,828
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Percentage scheduled for production within the next 4 months

(To Dec. 31) 43 pct 43 pct 57 pct

Percentage scheduled for production after the next 4 months

(From Jan. 1) 57 pct 57 pct 43 pct

\* Revised

## PLATING: Making Metals Tougher

**New flame-plating process shows better resistance to wear . . . Can be used on wider range of metals and with greater variety of shapes . . . Plating process still kept a secret.**

Flame-plating a new method of coating metals with tungsten carbide, provides the toughness of sintered tungsten carbide and in addition is much more adaptable.

Developed by Linde Air Products Co., Div. of Union Carbide & Carbon Corp., New York, flame-plated coatings are reported to have a wear life up to five times that of sintered tungsten, 15-20 times that of chrome-plate, and 50 times that of tool steel. The process can be used to plate a wider range of metals and covers a greater variety of shapes. Flame-plated tungsten carbide coatings have more "give" and do not crack as easily as sintered tungsten carbide platings.

Flame-plating has been used successfully with other metal coatings, but the company has concentrated most of its experiments on applications with tungsten carbide.

**Low Temperatures—** Secret of the flame-plating method's greater adaptability is the low temperature used in the plating operation. Temperature of the base metal never goes higher than 400°F. This virtually eliminates warping and changes in metal properties. Higher heat requirement of the sintered method has limited to a large degree the kinds of metals that can be coated in this manner.

The flame-plating process has been used to coat cast iron, aluminum, copper, brass, bronze, titanium and magnesium. Still outside its scope are Stel-

ite alloy, chrome-plate, boron carbide, sintered tungsten carbide, and all other alloys and carbides.

Size of parts that can be flame-coated is governed at present by the handling equipment available. Largest area that can be flame-plated is a surface 6 in. wide by 40 in. long. Shape has proved less of an obstacle, as Linde has used the new plating process on flat areas, cylinders, holes, and parts having irregular contours.

Range of coating thickness is from 0.0005 to 0.020 in. And surfaces can be ground to finish of approximately 2 microin. rms.

**Secret Process — Method** by which the tungsten carbide coating is deposited by flame-plating is being kept secret, pending granting of a patent. It is known,

however, that composition of the flame-plate coating is 92 pct tungsten carbide, 8 pct cobalt. Hardness of the plating rates about 89 on the Rockwell A scale.

Marketing is still in the creeping stage. Flame-plating was developed at Linde's Speedway Laboratories in Indianapolis, Ind., and all commercial coating is done there. Articles are prepared for flame-plating by the customer, sent to Speedway for coating and then returned.

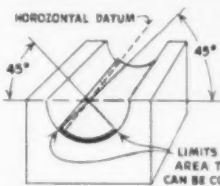
This intricate procedure is recognized as one of the growing pains of the new business. As demand develops, Linde plans additional facilities in other areas.

**Cost Varies—**Charges for flame-plating vary greatly. Size and shape of the part, thickness of coating, and number of articles set the cost. Generally the charge falls somewhere between the cost of a hard-faced part and a sintered tungsten carbide coat.

Under operating conditions, the flame-plating process has been used on core rods, plug gages, burnishers, saws, shafts and bearings, draw dies, thread gages and paper slitter knives.

Operating tests made on plug gages of different materials showed that flame-plated gages lasted five times as long as boron carbide gages, three times as long as sintered gages. In another field test, an auto manufacturer using a flame-plated burnisher produced 80,000 parts before the burnisher broke because of a misaligned steering knuckle. After checking the tool, the manufacturer estimated that the burnisher could have produced an additional 100,000 parts had it not been for the accident. Average life of a chrome-plated burnisher is 8000 parts, the manufacturer said.

### Facts on Flame-Plating

Composition	92% tungsten carbide; 8% cobalt	
Hardness	1200 to 1500 Vickers (300 gm. load)	
Coating Thickness	Maximum - 0.020 in.; Minimum - 0.0005 in.	
Surface (As Coated)	125 microinches rms (Brush Analyzer)	
Surface (After Finishing)	2 microinches rms (Brush Analyzer)	
Base Materials	Tool steels, cast iron, aluminum, copper, brass, bronze, titanium, magnesium	
Temperature of Base Piece during Application of Coating	Less than 200 deg. centigrade	
• Size of Base Piece	Round O.D. - from 1/8 in. to 6.0 in. Length - to 40 in.	Flat As coated - 6 in. by 40 in. Finish-ground - 3/4 in. by 40 in.
• Shape of Base Piece	Externally -- any area at no greater than 45° from a horizontal datum  Inside cylinder walls -- Coating can be deposited to a depth equal to the diameter of the hole.	

• Other sizes and shapes can be handled with special jigs and fixtures.

## FASTENERS: Profits Squeezed by OPS

**Get price increase of 2.2 pct . . . Not enough to cover higher steel costs, plus wage boosts, plus freight, material increases . . . Charge confusion, unfair treatment—By J. B. Delaney.**

The industrial fasteners industry feels just like the growing boy who has been outfitted with a pair of shoes several sizes too small. The squeeze is painful.

Office of Price Stabilization has fashioned the shoes for the fasteners producers with GOR 35, permitting the industry to pass through cost increases on raw materials only. Increased costs for labor and transportation must be absorbed.

Under this directive the industry has increased prices in a range of 2.2 pct to 2.5 pct, depending on the cost position of the individual company. OPS is understood to be considering imposing a uniform increase of 2.2 pct, which would pinch the feet of some companies even more.

Producers of nuts, bolts, rivets, and other fasteners realize they may not be any worse off than other metal fabricators caught in the same squeeze, but they contend this fact makes even more urgent a re-examination of OPS' unrealistic position.

**Charge Unfairness**—The industry argues that its cost of steel has increased \$5 to \$7 per ton, depending on product mix of each producer. In addition its labor costs have increased or will increase in line with labor cost advances of the steel producers. Several companies, under contract with the same union as the steel companies, have not only been forced to grant the same wage increases but have had to give the workers one more month retroactivity than the steel companies gave. Freight rates have advanced and cost of materials other than steel is rising. One company estimates raw material cost increases at 7 pct.

The president of a large com-

pany in the industry puts it this way:

"The actions of the Office of Price Stabilization, following the recent increases granted basic steel producing companies, and the subsequent increase in price allowed them, has been fraught with inconsistencies and inequities. The fasteners industry, and particularly those of us in this industry who have been forced to follow the steel pattern in wages, plus raw material costs, have been unfairly dealt with."

The industry feels an increase of 10 to 12 pct, minimum, would be needed to compensate for overall advances in costs.

**Idle Capacity** — Producers are afraid there isn't much chance of further price relief in the immediate future—at least not until after election. Their only other recourse is the Johnson formula permitting higher prices when earnings fall below 85 pct of a 3-year base period. But this step is so involved and slow-moving that



"Are you sure, dear, it's the American custom to bring the boss home for dinner?"

not much hope is placed in it. Meanwhile the profit trend is down.

The industry is also wrestling with another problem—steel supply. Companies consuming large diameter bars are particularly hard hit. In the face of large order backlogs, some companies have idle capacity.

A combination of low production due to inadequate steel supply, and inability to increase prices to a realistic level could easily throw some producers into the red. Profit position of the industry has been modest. One producer last year earned a net of only 3.6 pct on sales.

The industry consumes 2.5 pct of the nation's finished steel production, virtually all of it in hard-to-get bars, and rods, some wire.

### OPS Hits Where It Hurts Most

Weight of its own paperwork is putting a staggering burden on Office of Price Stabilization. At the same time its profit squeeze policy toward metalworking industries is bringing an avalanche of complaints.

Crux of the problem rises from OPS's pass-through allowance for higher steel costs, but not higher labor and freight costs. In most metal fabricating industries the latter increases amount to much more than steel price rises.

Irate businessmen visiting, calling, or telegraphing Washington find their only recourse for relief is under the so-called industry earnings standard, to them a fuzzy and controversial yardstick. Because of the diversity of operations of some companies its application requires reams of statistics, red tape and time.

Preliminary work toward applying the standard is underway in a number of industries including fasteners, open die press and hammer forgings, internal combustion engines, metal lath producers, and others.

Some companies that are so far eligible for no more than a 2 or 3 pct price increase insist that their costs have gone up more than 10 pct.

## Kitimat Is Coming

Aluminum smelting requires power—almost 10 kwhr per lb of metal produced. So the aluminum companies seek out potential sources of energy and build reduction plants nearby. In many cases they build the power plants as well.

One such case is that of Aluminum Co. of Canada. A vast project is under construction in the rugged mountains along the Pacific Coast of the Dominion.

The reduction plant is to be located at Kitimat, British Columbia. When it starts operating in 1954 it will be capable of producing metal at a rate of about 90,000 tons annually. With completion of the final stages, capacity will go up to approximately 500,000 tons.

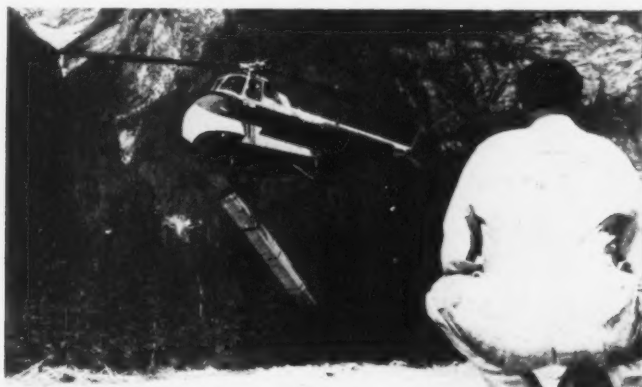
Electrical energy will be generated, at a cost of less than 1 mill per kwhr, by the enormous hydroelectric installation pictured here in the construction stage.



**TUNNELING:** Water will go through a mountain in this 30-ft diameter tunnel for 10 miles to the vertical penstocks. They're digging from both ends and from a valley near the middle.



**BOSS MEN:** Top men on the project are (left to right) R. H. Madson, assistant project manager for Morrison-Knudsen of Canada, Walter Abrahamson, Alcan engineer and Ollie Strandberg, project manager.



**AIRMAIL:** Rugged country and no roads makes it necessary to deliver supplies to construction crews by helicopter. Here one takes off with a load of lumber slung below for the men stringing the 50-mile power line.



**EASY WAY:** At dam site a workman washes down rock fill with a hose. Dam, to be named Kenney Dam, will reverse the flow of the Nechako River by sealing off Ootsa-Tahtsa chain of lakes at the eastern end.

**ROUGHING IT:** Here's one of the tunnel crews' campsites (bottom of picture) on the Kemano river. General view of the mountains carries full impact of the type of terrain. Climate limits the working season to only 5 months for the 6000 men currently employed on the project.



# IS THERE A BETTER METHOD OF PRECISION FINISHING?

The answer is finally YES. The long search for a fast, easy method of close tolerance finishing has been successful. "Hand" finishes are now produced mechanically in a *matter of seconds* in the new Liquamatte to eliminate many tedious operations. Scale, burrs and grinding lines are quickly removed while holding tolerances of .0001". Dies, molds and cutting tools are cleaned and/or finished without breaking down sharp edges or corners.

The Liquamatte is a form of wet blasting that has been so simplified that it overcomes the operating difficulties previously connected with this process.



Typical heat treated forging die, one half of which has been cleaned with the Liquamatte using a fine mesh liquabrasive.

Model 43 American Liquamatte Cabinet, with exclusive vertical pump.

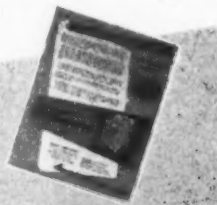


Fourteen advanced design features cut finishing time, reduce downtime and increase production. Push button controls are located at the work station. There are no time-killing valves to open or close. Parts are quickly moved in and out of the work-cabinet through convenient openings. When changing abrasive size, the hopper is drained in seconds without bailing.

These are just a few of the many reasons why the Liquamatte is a better method of precision finishing. We would like the opportunity to prove it to you with a demonstration.

## GET THE FACTS

Send for Bulletin 23, describing the advantages, specifications and applications of the new Liquamatte.



# American LIQUAMATTE

WHEELABRATOR & EQUIPMENT CORP. WET BLASTING

510 S. Byrkit St., Mishawaka, Ind.

## Raw Materials

### GOALS: Is So Much

Some industries fear expansion goals set by U. S. may be too high . . . Not at capacity.

Indications are that a few industries are taking second look at capacity goals recommended by the government and are wondering:

If so much expansion is necessary?

A case in point is the tubular heat exchanger manufacturing industry. There is a growing split of opinion between industry and government whether expansion already scheduled is not sufficient for needs.

Chances are that this industry may bring expansion to a halt—some 10 million sq ft short of the production capacity of 60 million sq ft which the government thinks necessary.

**Double Capacity**—National Production Authority officials came to the conclusion that the industry's production capacity should be doubled by 1954. This meant that facilities would have to be expanded sufficiently to turn out an additional 20 million sq ft of heat exchanger surface.

Since the defense program started, exchanger capacity expansion projects of from 7 to 8 million sq ft have been granted fast tax amortization certificates. Another 1 million sq ft in new capacity is covered in pending applications.

But the industry doesn't see how more capacity would help increase production. Right now it reports that it is only running at 80 pct of existing capacity. Reasons are familiar: It can't get enough materials and labor is short.

Biggest complaint is low steel allotments of certain items such as heavy wall pipe. Other items must be purchased in carload lots—more than is needed, which throws inventories out of balance.

**More Steel**—NPA has told the industry it can probably make steel

## Capacity Needed?

allocations on a specific project basis and perhaps juggle the inventory rule so as to permit inventory measurement on a product basis and thus help ride out the storm.

This would help solve current problems. But there is indication that the industry, particularly the smaller firms, are becoming reluctant to expand further, despite the lure of fast tax amortization.

Chief markets now for condensers, reboilers, jacket coolers for diesels, reduction gear coolers, and other heat transfer items are the military and defense-supporting programs. Peacetime customers of the industry are the petroleum, chemical, and electric power industries.

**Enough Demand**—Industry wonders what will happen when defense procurements level off and industrial expansion comes to an end. Will replacement and new demand support a production capacity of 60 million sq ft?

Manufacturers tell DPA-NPA they might be inclined to go ahead with the expansion to meet the proposed goal—if the government will first assure them of a minimum of government orders for the next 5 years.



October 2, 1952

## IS THERE A DIFFERENCE IN ABRASIVE LIFE?

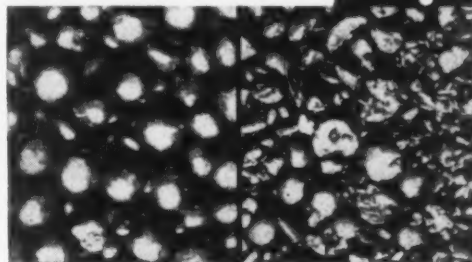
With all manufacturers claiming longer life for their abrasives, it's time to review the facts. Iron shot is still iron.

Through annealing, drawing and other processes the life of some chilled iron abrasives has been increased so they can be sold as premium abrasives. BUT iron shot DOES NOT HAVE THE LIFE OF STEEL.

Only Tru-Steel Shot has the toughness and life of true steel. It is made of high carbon steel that has received a full heat treatment. That's why Tru-Steel Shot maintains its size and shape longer, giving many more hours of efficient blast cleaning.

### LIFE COMPARISON

Tru-Steel retains its shape after 1500 passes. Chilled Iron breaks down after only 50 passes.



TRU-STEEL  
No. 230 at Mag. 10X

CHILLED IRON SHOT  
No. 230 at Mag. 10X

Other premium abrasives claim long life too but comparative tests prove Tru-Steel's superiority. For example, the results of a typical test made by a prominent manufacturer show the following cost per hour:

Abrasive "A" \$.67	Abrasive "B" \$.978
Abrasive "C" \$1.33	Tru-Steel \$.467

Profit by the results obtained by satisfied Tru-Steel users. Send in a trial order today — prove for yourself how you too can save.

GET THE FACTS - Bulletin 59-A shows where the average cleaning dollar is spent and how savings can be made. Send for your copy today.

**American**  
WHEELABRATOR & EQUIPMENT CORP.

510 S. Byrkit St., Mishawaka, Ind.

**TRU-STEEL  
SHOT**

# STANDARDS: Can They Be a Curse?

**Setting up different standards for each individual nation may force uneconomic production overseas . . . Can be both a trade weapon and method of getting discounts on imports.**

Use of standards to guide production has proved a boon to American manufacturing and selling—but when misused overseas it can become a curse. Groundwork has been laid in Europe and other lands to make standardization a thing of conflict and a trade weapon for the whims of nationalism.

Simply stated, standardization is the setting up of manufacturing specifications for goods and components to which producers conform. It is a major factor in making mass production work smoothly, establishes interchangeability, and abolishes production confusion over a hodge-podge of differing goods and parts built for similar purposes.

**Prolific**—Standards in overseas countries have been multiplying like rabbits. This would be fine if the standards were uniform—but standards differ from country to country. It's estimated that 34 countries have issued standards for about 41,000 products and parts.

Exporting manufacturers abroad have been keeping themselves relatively free of trouble with standards by keying their specs to standards of a few market areas. These did not differ widely.

Now a new trend is shaping. Former buyers are industrializing and with new industry new standards are evolving. Many countries have set up Standards Institutes. This becomes a matter of little concern if countries set up standards for products which domestic industry produces in sufficient amounts without recourse to imports. But when differing domestic standards are applied to the imported product then confusion and waste sets in.

**Trade Weapon** — In Portugal, for example, standards demand a

typewriter with an unusual keyboard. Foreign producers who wish to sell to Portugal must build a special typewriter.

Setting up of private standards can also become a trade weapon to protect a young home industry or a method to wrest discounts from exporting firms.

If imported goods do not meet a nation's standards, they can be returned. If misused, this is perhaps more effective than a high tariff wall and it has the advantages of ostensibly preserving trade agreements. Use of the rejection-through-standards device also permits a country to get imported goods at a discount when the claim is entered that domestic standards have not been met. All this depends on whether a buyer's or a seller's market exists.

For instance, a backward country, recently turning to industry, set up a standard for mild steel wire, setting up mechanical properties, content, weight, etc. The government and any merchant can reject imported wire for failing to meet standards.

**Discount Method** — While the government rejection may be completely ethical, the merchant's may be motivated by profit. If

prices are falling and the market is "against" him he can call for a standards check and it's almost a sure bet he will catch the producing firm in some sort of violation.

Succeeding in this, the merchant is in a position to talk discount. If the producing firm does not grant a sizeable discount it must re-transport the shipment back to the home port and then re-sell it. If the product was made to conform to standards of a certain nation it may be difficult to dispose of to importers of other lands.

A Belgian shipper recently shipped some 400 tons of mild steel wire, cold-drawn to an Asian country with its own set of standards. There was a slight deviation in the carbon content of the steel. The ultimatum to the exporter was 20 pct discount or no sale. The dispute was settled at 10 pct off. And the exporter considered himself fortunate—for that steel wire had been made to standards differing from European and English.

Standards are designed to eradicate wasteful manufacturing practises. Yet establishing country-by-country standards may do just the opposite. It can lower economic production by forcing exporting industries to produce a variety of essentially similar products. It also becomes a weapon for trade nationalism.

## British Pig, Steel Output Rises

British steel production for 1952 has passed that of 1951 for the fourth successive month. August output was at an annual rate of 17,472,000 tons, highest August figure since the record for the month was set in 1949, and an increase of 761,600 tons over August 1951.

Total steel output through Aug. 31 was 11,771,200 tons, up 1120 tons over the same period last year. Total 1951 production was 17,472,000 tons. British steelmakers are now sure they will beat that figure this year.



"Whew! What a morning. Haven't even had time to finish my newspaper."

# SPENDING: Off to Spirited Start

**Military obligated \$5.5 billion in orders during July . . . Air Force biggest spender accounting for \$2.2 billion . . . Total of obligations since Korean war started placed at \$117 billion.**

Military spending for the current fiscal year is off to a flying start. Men who allocate funds for the Army, Navy, and Air Force last week disclosed the obligation during July of funds totaling \$5.5 billion.

Biggest chunk (\$3.2 billion) is earmarked for procurement of major equipment and supplies, military construction, and plant expansion.

Procurement and construction figures encompass orders placed with private industry and such military production facilities as shipyards and arsenals. Biggest obligator was the Air Force, accounting for \$2.2 billion, while the Army and Navy put themselves on the line for a half-billion each.

**A Big Difference**—Making up the difference between \$3.2 billion and \$5.5 billion were pay and allowances for personnel in uniform, research and development funds, and related fiscal activities.

A breakdown of obligations for July shows \$2.6 billion for aircraft, tanks, ships, and other fighting equipment, or "hard goods"; \$400 million for clothing, food, and fuel, or "soft goods"; and \$200 million for construction. In the figure for fighting equipment is a \$35 million sum for procurement under the military assistance program.

Congress voted \$47 billion in new obligational authority for military activities for the fiscal year, with almost \$30 billion to be used for purchasing and construction. For military assistance to foreign governments, \$4.2 billion was appropriated, nearly all of it to provide for military goods.

**Carryover**—Aside from its new funds, Defense Dept. found itself with \$7.6 billion in unobligated balances carried over from the previous fiscal year. All except a

half-billion of this amount was earmarked for procurement and construction programs. This brought the total available funds in this category to \$37 billion at the end of July.

The anticipated transfer of substantial amounts of military assistance funds to Defense Dept. was expected to bring the potential sum for buying-and-building obligations to \$41 billion. Analysis of this total shows \$32.5 billion for fighting equipment, \$3.1 billion for "soft goods," and \$5.4 billion for construction.

In the 25 months since fighting began in Korea, the Air Force brought its procurement and construction obligations up to \$32.4 billion. In the same period, the Army obligated \$30.7 billion and the Navy \$20.7 billion for these items.

**Since Korea**—During the Korean emergency, Congress has put a total of \$166.8 billion in obligational authority at the disposal of the Defense Dept. Funds for purchases and construction made up \$117.5 billion of this sum, with \$96.3 billion intended for fighting hardware, \$11.3 billion for "soft



"You'd think anyone hitting tolerances like I do all day could learn to handle a safety razor."

goods," and \$9.9 billion for construction.

Actual obligations for all purposes ran to \$117 billion, of which \$83.8 billion covered buying-and-building orders. Included in this latter figure was \$70.4 billion for "hard goods" purchases, \$8.6 billion for "soft goods," and \$4.7 billion for construction.

## Contracts Reported Last Week

Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Replenishment of other motor vehicle parts, 2000 ea, \$38,300, Detroit Steel Products Co., Detroit.

Replenishment of tank and combat vehicle parts, 325 ea, \$98,260, Jack & Heintz, Inc., Cleveland.

Replenishment of tank and combat vehicle parts, 200 ea, \$37,780, GMC, Allison Div., Indianapolis, *H. S. Bowden*.

Replenishment of other motor vehicle parts, 20000 ea, \$35,280, The Electric Auto-Lite Co., Toledo.

Replenishment of other motor vehicle parts, 20945 ea, \$50,848, Dana Corp., Toledo.

Replenishment of tank and combat vehicle parts, 575 ea, \$43,317, Novi Equip. Co., Novi, Mich.

Replenishment of tank and combat vehicle parts, 9800, \$264,600, Cogmatic Co., Milwaukee.

Fuze, dummy, M73, 1040000, \$972,920, Deere & Co., Moline, Ill.

Kit, truck 5 ton, 66, \$96,028, International Harvester Co., Chicago.

Projectile 20MM, 1447500, \$302,527, Automatic Pencil Sharpener Co., Rockford, Ill.

Adapter, recoil cal. 50, 1000, \$44,580, Metal Specialties Mfg. Co., Chicago.

Adjuster assy, 3247 ea, \$30,839, Bendix Aviation Corp., South Bend, Ind, *G. I. Lyman*.

Parts—for aviation armament, var. \$39,370, Federal Enterprises, Inc., Chicago.

Mount assys, var, \$38,421, Lord Mfg. Co., Erie, Pa.

Carburetor assy, 155 ea, \$189,529, Bendix Aviation Corp., South Bend, Ind., *G. I. Lyman*.

Maintenance parts for actuator assys, var, \$76,966, General Motors Corp., Dayton.

Controller assy, var, \$131,288, The W. L. Maxson Corp., New York.

Items for propeller parts, var, \$82,084, United Aircraft Corp., East Hartford, Conn., *Adam C. Walz*.

Spare parts for materials handling equipment, var, \$69,083, Clark Equip. Co., Jackson, Mich.

Spare parts for special purpose equipment, var, \$41,420, U. S. Thermo Control Co., Minneapolis.

Switchgear equipment, 1 set, \$109,235, General Electric Co., Philadelphia.

Maintenance parts for R4D aircraft, 324 ea, \$101,573, Douglas Aircraft Co., Santa Monica, Calif., *N. H. Shappell*.

Generator drive assys, 20 ea, \$82,668, Valentine Welder & Mfg. Co., Detroit.

Metal parts for shell, 500000, \$670,000, Hart & Cooley Mfg. Co., Holland, Mich.

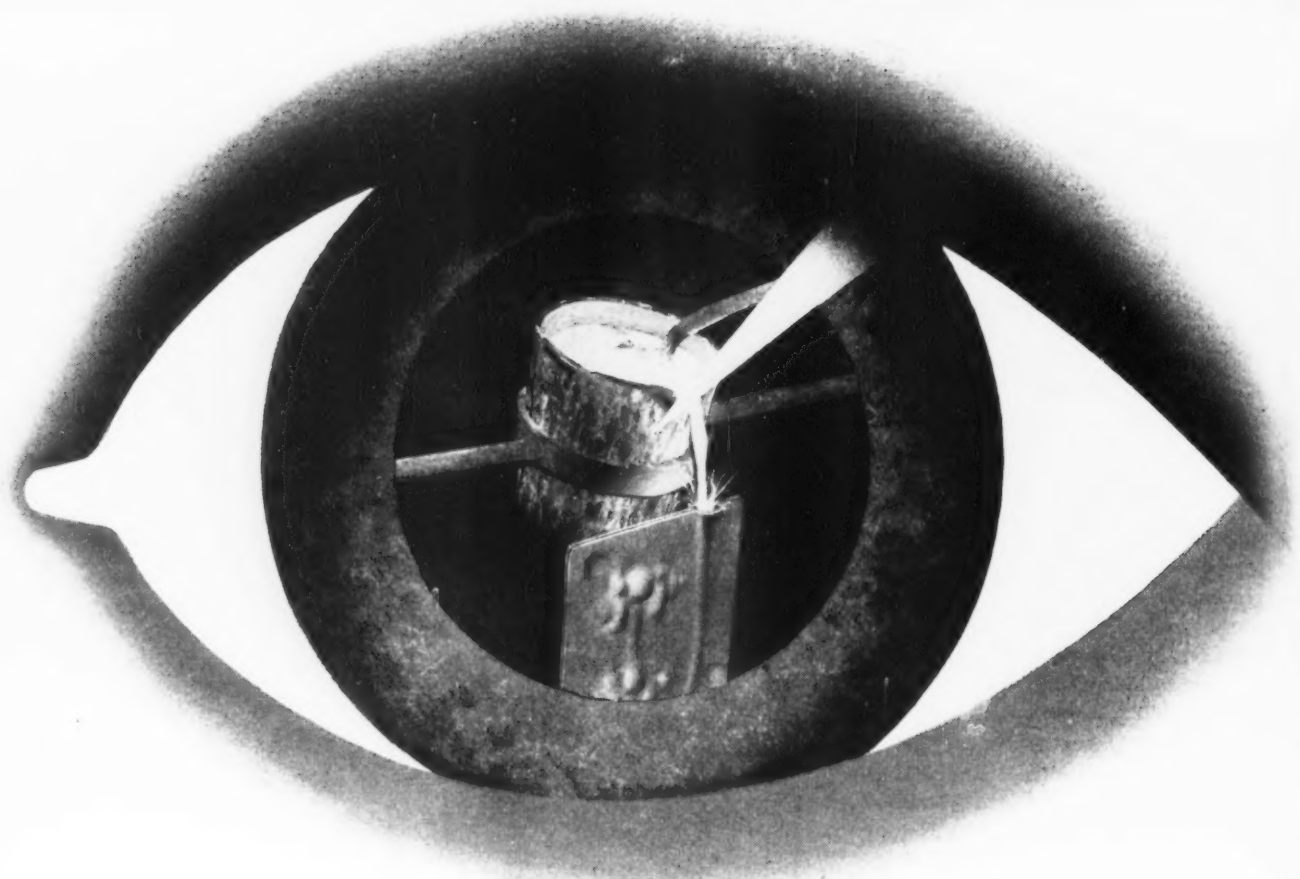
Primer, percussion, 10500, \$231,000, Ainsworth Mfg. Corp., Detroit.

Casting burster, M8, 322000, \$95,344, Stubnitz - Greene Spring Corp., Adrian, Mich.

Automotive spare parts, 1770, \$33,457, International Harvester Co., Detroit.

Automotive spare parts, 8850, \$75,299, Chrysler Corp., Detroit.

Turn Page



## Seeing is believing

The eyes of the engineering world are on the Shell Mold Process . . . for in it lies the key to mass production of quality castings with superior surface finish and closely held dimensional tolerances.

The eyes of the engineering world are on Cooper Alloy . . . for once again their pioneering research has made a dream come true . . . shell mold casting of stainless steel is now a production reality!

### SHELL MOLDING MEANS FASTER DELIVERY

Completely automatic molding operation substantially increases foundry productivity.

### SHELL MOLDING MEANS BETTER APPEARANCE

Superior surface finish means improved appearance and clearer identification of company trademark or material.

### SHELL MOLDING MEANS LESS MACHINING

Casting to closer tolerances means less metal to be removed by costly machining operations.

### SHELL MOLDING MEANS LOWER COSTS

Increased productivity, reduced machining time, and close tolerance casting, means reduced costs on volume work.



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**COOPER ALLOY**  
FOUNDRY CO. • HILLSIDE, NEW JERSEY

LEADING PRODUCERS OF **STAINLESS STEEL** VALVES FITTINGS AND CASTINGS

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## Defense Contracts

Tank spare parts, 5617, \$115,253, Continental Motors Corp., Muskegon, Mich.  
 Tank spare parts, 550, \$30,069, General Motors Corp., Detroit, A. C. Campbell.  
 Automotive spare parts, 19942, \$38,588, Federal Motor Truck Co., Detroit.  
 Tank spare parts, 2775, \$9,569,502, Continental Motors Corp., Detroit.  
 D-C computers with power rectifiers, 5, \$817,000, Electronic Associates, Inc., New Jersey.  
 Dual diversity frequency shift receiving systems, 41, \$110,716, Northern Radio Co., Inc., New York.  
 Spare parts, var, \$55,390, Thew Shovel Co., Elyria, Ohio.  
 Spare parts, var, \$26,875, International Harvester Co., Melrose Park, Ill.  
 Spare parts, var, \$39,782, Thew Shovel Co., Elyria, Ohio.  
 Spare parts, var, \$29,585, United Motors Service, Detroit, A. C. Campbell.  
 Worm gear and shaft elevating mech. assy, 50 sets, \$32,700, Cone Drive Gears, Detroit.  
 Repair parts for pumps, 2268, \$123,169, Buffalo Pumps, Inc., Buffalo.  
 Repair parts for heat transfer equipt., 7787, \$64,877, Diamond Power Specialty Corp., Lancaster, Ohio.  
 Truck, cab, chassis, 70 ea, \$306,296, Reo Washington Co., Washington.  
 Truck, cab, and chassis, 6 ea, \$86,124, The Four Wheel Drive Auto Co., Clintonville, Wis.

## Government Inviting Bids

Latest proposed Federal procurements, listed by item, quantity, invitation No. or proposal and opening date. (Invitations for Bid numbers are followed by "B," requests for proposals or quotations by "Q.")

### Frankford Arsenal, Philadelphia.

Spare parts for ballistic drive, 100000 ea, ORD-53-SP-19, Oct. 30.  
 Shafts-centrifugal, 490000 ea, ORD-53-155, Oct. 15.  
 Case carrying M82 spare parts, 35000 ea, ORD-53-SP-10, Oct. 17.

### Signal Corps Supply Agency, Philadelphia.

Cable assy, CX-1961(U), 5146 ea, 721-32B-B, Oct. 10.  
 Amplifier sub assy, 1692 ea, 436-32D-B, Oct. 7.

### Watervliet Arsenal, Watervliet, N. Y.

Steel hood assy, assembled, parts for 40 mm gun, 700 ea, 33351Q, Oct. 7.  
 Steel tube, parts for 60 MM mortar M2, 4002, ea, 53-28, Oct. 16.  
 Steel clevis, parts for 60MM mortar M2, 5000 ea, 53-28, Oct. 16.

### Chicago Chemical Procurement District, Chicago.

Cartridge, cluster ejection E8, 108000, CML-11-021-53-11, Oct. 6.

### Navy Purchasing Office, Washington.

Release, torpedo nose cap, aero 1A, 2497, 6732A-S, Oct. 20.  
 Combination bomb rack and rocket launcher, with spare parts, 10070, 6692-A-B, Oct. 15.  
 Connections, butt, electrical amp no. 34067, 1900500, 6720-O-B, Oct. 21.

### Columbus General Depot, Columbus, Ohio.

Steering axle parts, 2795 ea, 53-136B, Oct. 7.  
 Driving axle parts, 1910 ea, 53-136B, Oct. 7.

### Ordnance Ammunition Center, Joliet, Ill.

Cartridge, ignition M8 (loaded) for 81MM mortar, 4552000 ea, ORD-11-173-53-10, Oct. 15.  
 Tube, burster, for charge, 190000 ea, ORD-11-173-53-8B, Oct. 10.

### Springfield Armory, Springfield, Mass.

Spring, retainer, 100000 ea, 53-63B, Oct. 16.  
 Ejector, clip, 160104 ea, 63-63B, Oct. 15.

## Controls

### Industry Controls This Week

**Aluminum Scrap**—Amend. M-82 eliminates requirement that owners or generators of aluminum scrap report to NPA deliveries amounting to 20,000 lb or more.

**Automobiles**—Amend. 6, CPR 94 restores Chevrolet and GMC Suburban automobiles to coverage under CPR 94.

**Cryolite**—Amend. M-99, establishes inventory restrictions for users of cryolite.

**Mixed Powders**—SR 1, CPR 71 authorizes price relief for manufacturers of mixed powders used in production of sintered tungsten carbide.

**New Products**—SR 33, CPR 22 permits certain manufacturers who introduced new products at low prices to stimulate sales to raise their ceiling prices.

**Priorities**—Rev., NPAF-138 speeds up priority assistance for contractors working on military orders.

**Refractories**—Amend. 1, CPR 125 grants a 6 pct ceiling price increase to manufacturers of refractory products.

**Resellers**—SR 120, GCPR authorizes resellers of a wide range of products including appliances, furniture and building materials to raise ceiling prices to compensate for increased freight charges. Amend. 13, SR 29, GCPR allows wholesalers and retailers to employ a "first-in, first-out" inventory method of pricing.

**Solder**—Amend. M-8, permits use of body solder in auto and truck production.

**Zinc Scrap**—Revoc., M-65 removes limits on the length of time printing plants can hold obsolete printing plates before scrapping them.

### How to Avoid Varying Ceilings

Resellers can avoid having different ceilings on the same item at the same time through use of a new pricing order that became effective on Sept. 27.

Amendment 13 to Supplementary Reg. 29, General Ceiling Price Reg. (GCPR), allows wholesalers and retailers under GCPR to employ a "first-in, first-out" (FIFO) inventory method of pricing. This procedure is based on the assumption that all units of merchandise first received in stock are first sold.

The same action permits certain resellers, under specified conditions, to make simultaneous price changes in all their sales

outlets, based on categories or product lines instead of on individual items. This is calculated to help resellers avoid having different ceilings on the same commodity at a single time.

A resellers' group wanting to take advantage of Amendment 13 may apply to Office of Price Stabilization to make price changes for an entire category or product line on which selling prices to wholesalers and retailers have been increased or decreased by a uniform percentage.

### Latest Government Appointments

Charles F. Bannan, chief, Gear & Drive Sec., General Components Div., NPA;

Edward P. Chapman, chief, Tin Div., Office of Tin & Fiber, RFC;  
 Bonnell W. Clark, director, Electrical Equipment Div., NPA;

David L. Cole, director, Federal Mediation Service;

Robert L. Finely, special asst., DPA;

Henry H. Fowler, head, Office of Defense Mobilization;

Edwin C. Garwood, deputy asst. administrator, Industrial & Agricultural Equipment Bureau, NPA;

Edward A. Harris, consultant, Office of Tin & Fiber, RFC;

Stanley B. Hanes, chief, Fiber Div., Office of Tin & Fiber, RFC;

John E. Horn, director, SDPA;

E. Dorrance Kelly, director, Office of Synthetic Rubber, RFC;

Ralph F. Lucier, deputy director, Communications Equipment Div., NPA;

Richard A. McDonald, acting deputy administrator, NPA;

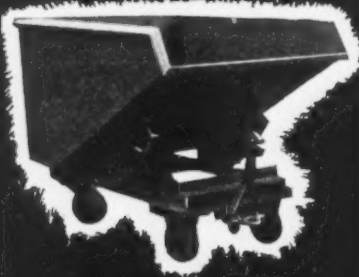
Wylie F. McKinnon, director, Office of Tin & Fiber, RFC;

Rufe B. Newman, Jr., acting assistant administrator for facilities and construction, NPA;

Charles W. Potter, director, Communications Equipment Div., NPA;

John F. Skillman, acting deputy asst. administrator, Industrial & Agricultural Equipment Bureau, NPA;


Earle L. Slayton, director, General Industrial Equipment Div., NPA.



**We Build  
Special  
Trucks  
and trailers  
To Your  
Specs!**

THE  
**KILBOURNE & JACOBS**  
MANUFACTURING CO.  
COLUMBUS 16, OHIO

We invite your inquiry.  
Complete design service.



## Industrial Briefs

**Company Organized**—E. B. Andrews and Harry S. Robinson have organized a company to be known as the **TECHNICAL EQUIPT. SALES CO.**, for the exclusive representation in southern Ohio, Indiana and Kentucky of a number of well known manufacturers of machinery, machine tools and precision measuring instruments. Main offices will be located at 2430 Central Parkway, Cincinnati.

**New Quarters**—**RUSSELL T. GILMAN CO.** has moved to new quarters at 2410 North Farwell Ave., Milwaukee.

**Contract Awarded**—A \$3,500,000 contract for installation of deck-edge elevators on the aircraft carrier, U.S.S. *Forrestal*, now under construction by Newport News Shipbuilding & Dry Dock Co., has been awarded to the Elevator Div., **WESTINGHOUSE ELECTRIC CORP.**

**Diamond Jubilee** — **AJAX IRON WORKS**, Corry, Pa., recently commemorated its 75th year of engineering for oilfield service.

**Revised Schedule Adopted**—**HACK SAW MANUFACTURERS ASSN. OF AMERICA, INC.**, has adopted Revised Standard Schedule for Hack Saw Blades, which has been approved by all American and Canadian manufacturers and becomes effective Jan. 1.

**Acquisition**—**CORY CORP.** announced the acquisition by long term lease of an additional manufacturing plant in Grayslake, Ill.

**Announcement** — **PRESSED STEEL CAR CO., INC.**, have virtually completed arrangements to acquire within the next 60 days the *Axelson Mfg. Co.* of Los Angeles.

**Purchased Site** — **CONTINENTAL CAN CO.** has purchased a 40-acre plant site in Omaha, Neb., and construction will start next month on a modern, one-story plant.

**Moved** — **SURFACE COMBUSTION CORP.** has moved to new offices at 10333 W. McNichols Road, Detroit.

**Elected**—**AMERICAN SOCIETY FOR TESTING MATERIALS**, announced the election of Robert J. Painter as Executive Secretary of the Society.

**Dedicated**—**INTERNATIONAL HARVESTER CO.**, Chicago, formally dedicated its new \$8 million motor truck engineering building and laboratories in Fort Wayne, Ind., recently.

**Contract Received**—**Chemical Plants Div., BLAW-KNOX CONSTRUCTION CO.** has received a contract from *Honeymead Products Co.* to furnish and install a *Rotocel Extractor* and all necessary equipment for processing 500 tons of soybeans per day at the latter's Mankato, Minn., location.

**Announcement**—**MICHIGAN STEEL CASTING CO.** formally opened The *Whitehall Precision Casting Div.*, at Whitehall, Mich., recently.

**Expansion**—**PIVOT PUNCH & DIE CORP.**, N. Tonawanda, New York, has purchased a 17-acre tract of land and will start constructing a building to be devoted to the repair and rebuilding of machine tools as a new service of the firm.

**Office Opened**—**MALLORY-SHARON TITANIUM CORP.**, of Niles, Ohio, has opened a West Coast office. George H. Denny is in charge.

**New Installation**—A new gas washing installation that will remove practically all of the iron ore dust from blast furnace gases will be placed in operation by the *American Steel & Wire Div.*, **U. S. STEEL**.

**Meeting**—The first regular meeting of **OPERATIONS RESEARCH SOCIETY** will be held at the National Bureau of Standards in Washington, on Nov. 17 and 18.

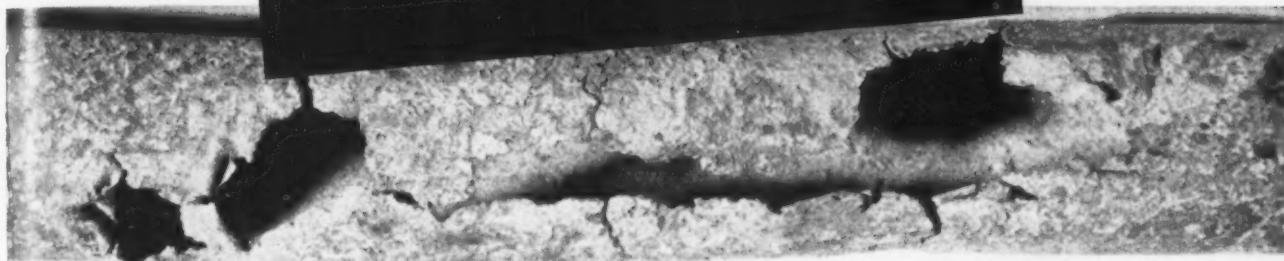
**Invited to Bid**—Engineering companies are being invited to submit bids on an appraisal of 26 synthetic rubber facilities owned by **RECONSTRUCTION FINANCE CORP.**, which is planning to dispose of them.

**Transfer**—The industrial truck sales and service departments of the Eastern Div., **HYSTER CO.**, will be transferred to Danville from Peoria, Ill.

**Possible Trend**—**SAMUEL FOX & CO., LTD.**, Stockbridge, England, has ordered the largest electric arc melting furnace in Europe thus taking the first step towards what may be a new trend in European production methods for special steel.

THE IRON AGE

## research at work!



Photograph of a section of a failed tube showing excessive thinning and pitting of the outer surface. Note also the circumferential cracks.

### CORROSION STUDIES CAN INCREASE THE ECONOMY OF COPPER ALLOYS

Copper and its alloys are notable for their resistance to corrosion under a wide variety of conditions. There are industrial applications where copper or the appropriate copper alloy should give an indefinitely long life, but where failure because of corrosion may result by reason of unsuitable design of equipment or improper control of environment. Further, there are many situations in which no commercial metal or alloy will have an extended life, but in which copper or one of its alloys possesses a combination of physical and chemical properties which render it the best obtainable material, when all factors, including ultimate costs, are taken into consideration. Hence correct specification becomes of great importance. Recognition of this by industry is responsible for the fact that the Revere Research Department devotes so much time to studying the corrosive effects of fluids and gases, and to preventive measures.

Recently a large manufacturer, who produces condensers as well as other equipment, reported that arsenical Admiralty tubes in a steam-jet ejector were failing after five years. This length of service is not too bad, but nevertheless such tubes often last much longer. Could we make any suggestions?

Seven failed tubes were examined for type of corrosion, metal and scale analysis. The facts were: outer surfaces were badly pitted and grooved with holes completely through in some areas; the inside surfaces were relatively untouched; cracking was circumferential, progressing from the outside; outer scale was largely cupric carbonates and copper sulfide; inner scale was calcium carbonate, cuprous oxide and some iron oxide. Microscopic examination of the cracks showed they originated in corrosion pits on the outside, progressing inward across grain boundaries, rather than along them. The transgranular path of fracture, together with other characteristics of the microstructure, definitely established the fact that the

failure was of the corrosion-fatigue type. The corroding pits on the outside created stress concentration points of weakness, from which the cracks originated. Eventually the localized stress exceeded the endurance limit of the metal and it cracked.

The conclusion was, therefore, that damage was from two sources—the first being excessive carbon dioxide and the other non-condensable gases in the steam, which caused the excessive pitting and thinning. It is not unusual to have these and other corrodants present in damaging amounts in the air-ejector system, whereas they are not injurious elsewhere. The second cause of failure was excessive vibration somewhere in the unit which was responsible for the corrosion fatigue failure.

**RECOMMENDATIONS.** The copper-base tube alloy that generally possesses the greatest resistance to the non-condensable gases responsible for the corrosion of the Admiralty tubes is 5% aluminum bronze. Re-tubing with this was suggested. It was also recommended that steps be taken to effect a material reduction in tube vibration by placing a baffle in the steam inlet. In addition, it was pointed out that many operators find it good practice to discharge the after-condenser drain to the sewer instead of returning it to the system. By this means, the amount of carbon dioxide, ammonia and other gases in the system can be substantially decreased.

\* \* \*

It is interesting to note that the Revere Research Department, located in Rome, N. Y., was able to determine these causes and suggest remedies without ever having seen the condenser. This is the result of modern equipment, and long experience in studying the problems of corrosion. If you have a problem regarding the corrosion of copper and copper alloys, or aluminum alloys, why not take it up with the nearest Revere office? Remember, corrosion that is too rapid wastes both your money and our national resources.

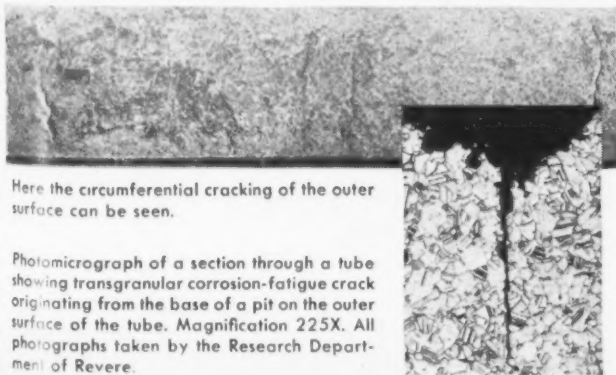
## REVERE

**COPPER AND BRASS INCORPORATED**

Founded by Paul Revere in 1801  
230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.;  
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Sales Offices in Principal Cities, Distributors Everywhere

SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY



Here the circumferential cracking of the outer surface can be seen.

Photomicrograph of a section through a tube showing transgranular corrosion-fatigue crack originating from the base of a pit on the outer surface of the tube. Magnification 225X. All photographs taken by the Research Department of Revere.

# The Automotive Assembly Line

## Car Production a Tough Struggle

**Output in '52 won't top record but miracles were still worked . . . Producers showed great ingenuity while the tool freeze, metal shortages took deep bites—By R. D. Raddant.**

No production records are destined to fall in the automotive industry this year. Stringent controls closed the door early to that possibility and the subsequent steel strike nailed it shut.

In spite of this, it is still a year of production miracles. Emphasis

about some of the struggles in getting ready for the new Dodge engine in spite of Dodge's placing tooling orders in ample time ahead of the freeze.

**Made Tools**—The fact that some tools just weren't available actu-

factory, but the master mechanics hope these headaches can be avoided in the future.

**Field Expedients**—The stretch-out and resourceful improvisation has not been confined to tooling. An equally important job has been done in making scarce materials go a long way.

This is now reaching its peak in what one executive calls an "industrial Battle of the Bulge." He refers, of course, to the bulge in production while steel supply is so short.

Automotive companies are re-rolling bars. Some are making two narrow sheets do where one wide one was used. On the other side of town a competitor is cutting sheets into strips. This is costly in many ways and is an expensive production necessity that will be abandoned as soon as supply makes it possible.

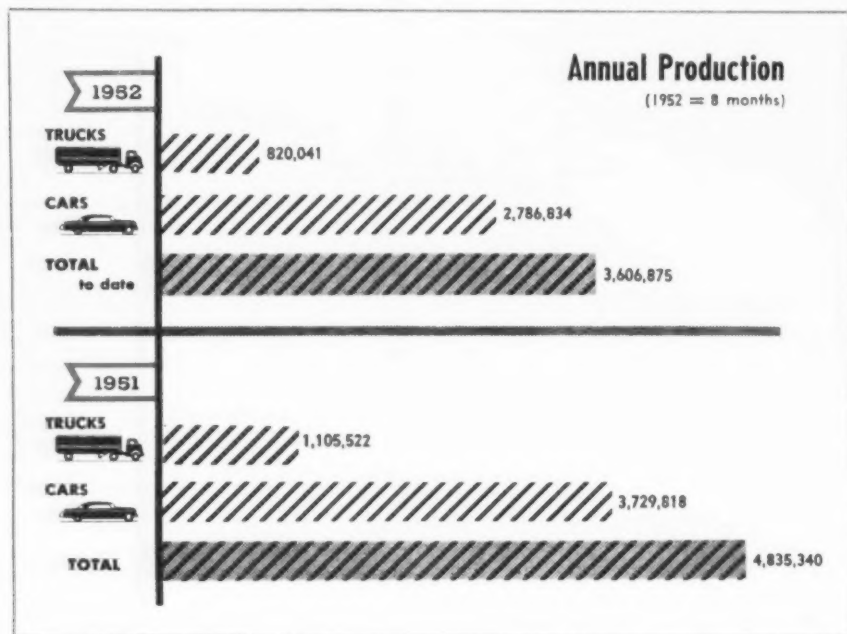
Repair costs on dies are climbing because of the use of different types of sheets or sometimes uneven sheets that cause unusual wear.

Yet automotive production continues to soar. A 15-months weekly high for production was reached early in September, the highest point since June 1951.

**Coming and Going**—Will a latent or secondary effect of the steel strike hit manufacturers early in 1953?

It isn't unanimous, but some automotive people are worried that there might be serious slowdowns in getting tools and large manufactured equipment. The reasoning is that effects of production lost during the steel strike by manufacturers of these items won't reach consuming industries for several months.

Opposing view is that steel never became a problem with these manufacturers and that their production was not seriously interrupted.



is not on how many cars the industry can make, but how many it can make with what it has to work with.

Probably never in its history has the automotive industry stretched materials so far or improvised so much.

The freeze on tools for civilian uses earlier this year put a stop to plans of several auto makers to introduce new engines in 1953. It is generally assumed that both Chevrolet and Pontiac had hoped to have new V-8 engines in their new models, but were unable to obtain tooling.

Stories are heard from Dodge

ally put several auto companies, Dodge included, into the machine tool business.

Although results were satisfactory, these projects are not economic and there is no indication that any auto company wants to stay in the tool business. They were pushed into this situation by necessity.

Some new production lines that were aimed at complete automation with entirely new equipment have visible gaps that couldn't be filled with new tools and are bridged by use of tools on hand.

Here again the results are satis-

**says**  
**The Duraloy Company**



**THE DURALOY COMPANY**

SCOTTDALE, PA

JULY 23, 1952

THE LEVINSON STEEL COMPANY  
SOUTH 20TH AND WHARTON STREETS  
PITTSBURGH 3, PENNSYLVANIA

DEAR SIR:

[illegible]

THROUGH YOUR CO-OPERATION AND THAT OF OUR  
CONTRACTORS, DELBERT L. SMITH & COMPANY, INC., MCKEES  
ROCKS, PENNSYLVANIA, WE ARE VERY HAPPY TO REPORT THAT  
OUR NEW AND LARGER FACILITIES ARE NOW OPERATING ON  
SCHEDULE.

OUR NEW AND LARGER SCHEDULE.

MANY THANKS FOR YOUR PROMPT SERVICE AND EXCELLENT CO-OPERATION.

VERY TRULY YOURS,

VERY TRULY YOURS,

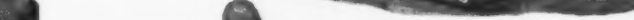
F. S. WYNANS.  
PRESIDENT

FSW:MBS


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OF SPECIALIZED SERVICE TO INDUSTRY



The **Levinson** **STEEL COMPANY**  
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## <sup>26</sup>*Fabricators of Steel for Industry*

October 2, 1952

# When a high-strength steel is needed

for severe cold-formed shapes like these bumpers

**Specify** →



and get all of the  
requirements  
of SAE 950



When a material meeting the requirements of the high-strength, corrosion-resisting steels of SAE Specification 950 is used for severe cold-formed shapes, it will pay to investigate N-A-X HIGH-TENSILE steel—the low alloy steel with *built-in formability*. Its finer grain and higher hardness also result in brighter luster when ground and polished for plated parts.

**GREAT LAKES STEEL CORPORATION**  
N-A-X Alloy Division  
Ecorse, Detroit 29, Mich.

**NATIONAL STEEL CORPORATION**



## QUOTAS: Steel Cut Unrealistic

**Announcement of auto cutbacks almost funny—but nobody's laughing . . . Carryovers will allow 1.25 million cars, 315,000 trucks to be made in first quarter . . . Face selling job.**

Premature announcement that automotive production for the first quarter of 1953 would be cut 20 pct might have been the source of a few laughs in Detroit but very few auto men found anything humorous in it.

Most realized that a cut to 60 pct of the steel allotted for the third quarter was completely unrealistic and didn't get upset.

Actually, the industry will get allotments to build 1,250,000 cars and 315,000 trucks in the first 3 months of the year, the most permitted in any quarter since controls were imposed.

The off-base announcement was made by the Defense Production Administration which indicated a cut in actual steel allotments. National Production Administration, however, continued to issue certificates during the strike which users were unable to cash. First quarter quotas will be set to make up for the carryover of unused tickets.

The 1,250,000 cars may be a little short of what manufacturers would like, but the situation at the end of the week looked vastly better than on Monday when cutbacks appeared possible.

**Selling Job**—Sales people indicated a return to old fashioned competition may be in the wind early in 1953.

Joseph E. Bayne, of Lincoln-Mercury, predicted "the biggest campaign for new car business ever witnessed." He pointed out the obvious that manufacturers are already preparing for a competitive market with vastly changed new models, increasing sales training and expanding production facilities.

Paul R. Davis, of Studebaker, said "there is every indication that

barring all-out war the market for new cars in this country is assured and especially during 1953 when the national defense spending will reach its peak."

J. C. Doyle, of Ford, declared that "automobile dealers who are looking forward to an indefinite continuation of a controlled market aren't facing the facts. Unless they begin now to prepare for the return of competitive selling, they are in for a rude awakening."

### PLASTIC BODY:

**K-F to build 1000 plastic-bodied convertibles as a market feeler.**

Edgar Kaiser, president of Kaiser-Frazer Corp., announced today that K-F is launching an exten-

sive experimental program on plastic body sports cars.

Plastic bodies have great resistance to damage, repair easily, and resist corrosion.

Plastic bodies will be made by a California company and will be mounted on a Henry J Chassis. K-F intends to build 1000 of them on a trial basis. Future developments will depend on both mechanical performance and sales acceptance.

The extremely light convertible will weigh close to 2000 lb.

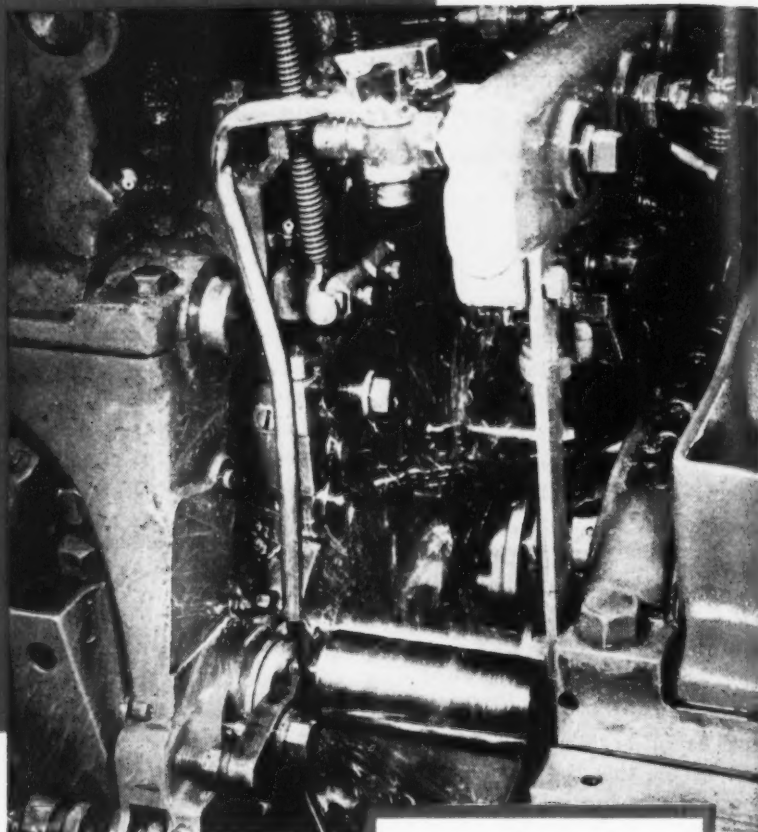
The announcement was made in connection with a preview showing of Kaiser-Frazer 1953 models. The sports car was not shown. New Kaisers will have increased hp and exterior and interior changes. Basic styling lines remain the same with more chrome and a revision of trunk design. Mr. Kaiser said prices will be "approximately" the same. The Henry J will be slightly longer and has a new clutch. Safety features in all K-F cars will receive a big promotion.

### THE BULL OF THE WOODS

By J. R. Williams



# TOOL LIFE UP 20%



## ...when manufacturer changes to **TEXACO CLEARTEX OIL**

**Job:** Machining plunger pins  
for M48A3 fuse  
**Machine:** Davenport Auto-  
matic  
**Metal:** #416 stainless steel  
**Coolant:** Texaco Cleartex  
Oil AX

Buchmann Spark Wheel Co., manufacturer of screw machine parts, Long Island City, N. Y., wasn't satisfied with the way a competitive cutting oil was performing on this job of machining stainless steel. Tool life was short, finish not all it should be. So they called in a Texaco Lubrication Engineer who recommended *Texaco Cleartex Oil*.

*Improvement was noted immediately. Finish was much superior and tool life was increased some 20%.*

*Texaco Cleartex Oil* is just one of a complete line

of Texaco Cutting, Grinding and Soluble Oils designed to help you do *all* your machining better, faster, and at lower cost. A Texaco Lubrication Engineer will gladly help you get these results whatever the metal you are working or your method of machining it.

Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

### TEXACO CUTTING, GRINDING AND SOLUBLE OILS FOR FASTER MACHINING

Faithfully yours  
**50**  
for Fifty Years

TUNE IN: Tuesday nights on television—the TEXACO STAR THEATER starring MILTON BERLE. See newspaper for time and station.

### Will Price Controls be Jettisoned?

**Democrats may abandon weak sister price controls as political liability . . . They hear scornful laughter . . . Will tag special interests for scuttling controls—By G. H. Baker.**

There's a growing suspicion among top Democratic leaders that the time to end all remaining price controls is now at hand.

Much as the Administration dislikes the idea of surrendering any part of the economic control program for which it fought so hard at the Capital only a few months ago, it is beginning to dawn on President Truman's hierarchy of advisors that the entire price-control program is drawing scorn and ridicule from the public—and particularly from business—because of its increasing ineffectiveness.

With great reluctance, Mr. Truman's top aides are now preparing to recommend that all remaining controls over prices at every level of production and distribution be scrapped.

**Mocking Laughter**—Price controls in their present ineffectual form are much more a political liability to the party in power than they are an asset. To OPS, the unpleasant sound of laughter from the nation's housewives at the mention of the words "price control" is a subject of grave political concern.

Better put a finish-mark on today's sketchy pattern of controls than to let the program dwindle away piecemeal—to the utter contempt of the voters, it is argued in private political huddles.

At least one off-the-record plan now under discussion in Administration circles calls for the early release of a blast by Price Stabilizer Tighe E. Woods against the "worthless" price-control law passed by Congress last summer. Mr. Woods will claim that the majority of voters demand "strong" price controls, and will blame Re-

publicans and Southern Democrats in Congress for enactment of a "poor" law.

**"They Did It"**—Mr. Truman then will be in a position, so it is reasoned, to announce cancellation

#### Reds' Wage SPREAD

Wage differentials between skilled and unskilled workers have increased under Russian Communism. A Labor Dept. study of steel and construction industries, considered representative, showed a Soviet spread almost double that in the U. S.

Top steelworkers in the U. S. S. R. get basic wages about 3.5 times the minimum base pay. In construction the ratio is 3.6. Comparable U. S. ratios are a shade over 2 and 2.1, respectively. And trends in the two countries also differ with American ratios decreasing and those in Russia on the upgrade.

This flouts the early Red theme that communism would eliminate the wide spread.

of the remaining price controls on the ground that they have been rendered meaningless by "special interests."

No mention will be made of the Administration-backed wage boosts granted during this past summer for the steel, copper, and aluminum industries (each contributed substantially to further inflation), nor of the lack of regard for markets by OPS.

**Live Statistics**—Washington now definitely intends to give more sympathetic—and more realistic—attention to the everyday

problems of manufacturers and distributors from here on. Regardless of which political party wins, federal departments are to concentrate more and more on the extension of worthwhile assistance—particularly the supplying of "live" statistics—to business.

Key federal agency in this approach is the U. S. Dept. of Commerce. Secretary Charles Sawyer has instructed each of his top aides and assistants to jog themselves out of their paper-pushing routines and to bring themselves realistically up to date on businessmen's problems.

**Fresh Outlook**—One of the first big steps is to be the publication late this year of a preliminary report on what's ahead for markets. The report will cover manufacturing, distribution, and retailing levels of business and industry.

To some extent, it will be a "look ahead" at prospective markets in 1953. It will also propose planning for the post-defense era, and is to present suggestions for charting of buying and selling courses.

**New Blood**—A recent and significant appointment in this new trend is that of H. B. McCoy, one of the government's top aid-to-business experts for many years, to the rank of deputy administrator of the National Production Authority. This is interpreted as grooming McCoy for the top job in future government planning of production and distribution and ultimate integration with Commerce Dept. Although NPA is technically a part of the Commerce Dept., it has been operating to a large extent independently.

**Merger on Way**—NPA's main reason-for-being thus far has been the allocation of steel, copper, and aluminum under CMP. When this program has outlived its usefulness, Congress will be inclined to view with suspicion any new requests for operating funds.

# BUILDING A GREATER AMERICA

*Safety's a big job, too, at Sun Ship. Safety glasses help protect workers who make the chips fly on other big jobs.*



## Little chips ...



## ...BIG JOBS

It would take a super-Pollyanna to describe a machine shop as a sculptor's studio ... And we haven't yet met a Sun Ship machinist who poses as a Michelangelo ... at least in his shop work.

But the sculptor fashioning marble into the statue or architectural ornament that will be a thing of beauty ... and the machinist shaping steel into the 100-foot fractionating tower or small safety valve that will be a thing of service ... share alike in the knowledge that little chips are part of a big job.

A lot of chips tumble onto the floors of Sun Ship's many shops and shipways every day. It's been that way for more than 35 years. And it's that way because Sun Ship is doing a pretty big job with men and metals as its part in helping build a greater America.

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## FREIGHT CARS: Production Bogged

**Material and labor shortages force shutdowns . . . Builders can't get steel types, sizes they need . . . Deliveries a third behind schedules . . . Orders off, cutting backlog to 9 months.**

Freight car builders are pretty blue. Meeting in a closed industry advisory committee session with National Production Authority officials last week, representatives of the industry said shortages of materials and labor are forcing costly shutdowns.

One company, shutdown for 30 days, will try to re-open in mid-October if steel shipments come through. A second plant, with a large order for ore cars, faces a shutdown by January, the way it looks now.

Still a third freight car builder reports being able to operate only because of government orders and their military priorities. Others believe shutdowns from time to time over the next 5 months are inevitable.

**No Steel**—They just can't get the heavy types, sizes, and shapes of steel needed, is the common complaint. An already bad situation was aggravated by the steel strike which caused one of the larger plants alone a production loss of 7000 units.

Center-sill sections for car frames is a particularly bad bottleneck, made worse by the breakdown of a Weirton Steel Co. mill which produces large amounts of this specific product.

Production officials say they are trying to work out an arrangement with both United States Steel and Bethlehem to step up production of this type steel. But this would require several months for substantial rescheduling.

**Orders Fading**—Meanwhile, as if things were not bad enough, industry officials are discouraged by the slowing down of new order placements by the railroads.

This is also a sore point with Defense Transport Administration

(THE IRON AGE, Aug. 7, p. 70.) DTA feels that the railroads should place new orders regardless of the current materials situation. In fact, DTA says, they made such a promise during the ICC hearings on their applications for higher freight rates.

Orders have been slipping indeed. Since Jan. 1, 1952, new orders reported through Aug. 31 by the American Railway Car Institute amount to slightly less than 30,000.

This is approximately 10,000 less than would normally be retired. New orders reached a low of 397 in April but were back to 4558 for August, still below the retirement rate.

Meanwhile, car builders were able to deliver 54,669 new cars through the first 8 months of 1952—some 25,000 units short of programmed production.

**Backlog Down**—This slow-up in new orders has resulted in the backlog of car orders decreasing from more than 120,000 as of Jan. 1 to less than 96,000 as of Sept. 1. This is a 9-month backlog on the

basis of generally estimated current capacity.

Parts and components manufacturers are disturbed about the outlook for the next 90 days. However, they tell NPA they are having reasonable luck in getting third quarter tickets cashed although one firm said its third-quarter delivery is not scheduled until January.

Control officials have promised to take steps to remedy one fairly constant complaint—that allotments of controlled materials to components manufacturers and the car builders do not match.

This means that across-the-board percentages in future quarterly allotments may be eliminated in favor of a system which will assure that when a car builder gets allotments for ore cars, for instance, makers of parts or components for ore cars will also get allotments for the same quarter.

### Gas Storage Project Approved

Federal Power Commission has approved a \$42 million, 5-year construction program for underground storage of natural gas in Illinois.

Natural Gas Storage Co. of Illinois, sponsor of the project, estimates its costs for the first year of construction will total \$17 million. Present plans call for delivery of 150 million cu ft of gas per day during the 1953-1954 winter season. Deliveries during peak periods are expected to reach 1.5 billion cu ft per day.

Construction during the first year includes drilling of 25 wells and laying of 16.7 miles of 30-in. pipe to transport gas to storage during summer and from storage during winter. Also included in the first year's program is construction of a 10,000-hp compressor station, a dehydration plant, about 8.75 miles of well lines, 25 well meters, one main storage meter, and other related equipment.

Later development plans call for construction of a second and a third 30-in. line, about 43 miles long, and drilling of 25 additional wells.



## West Coast Report

### Warehouses Air Their Gripes

**Roughest western problem is a small size bar shortage . . . Stocks are half normal and badly balanced . . . Coast warehouses buy 26 pct of district's steel—By T. M. Rohan.**

Western steel warehousemen put on their best bib and tucker for the public last week. Although privately the independent and mill-owned warehouses compete with each other, they joined in extolling the merits of their business to the public.

Warehouse tours held in Los Angeles and San Francisco last week were the last of a series sponsored by the American Steel Warehouse Assn. in Philadelphia, Boston, Detroit, Dallas and Houston with the remaining one in New York this week.

**Warehouse Facts**—Western warehouses' current big gripe is a shortage of 3-in. and smaller bars. Eastern mills won't supply them because the West has capacity. West won't produce because larger items take less rolling time and are more profitable. Ditto is true for hot-rolled strip.

San Francisco Bay area stocks normally are about 50,000 tons total, now down to about 25,000 tons and poorly balanced.

Increasing number of customers are slow to pay bills because rapid expansion to get a share of the market has depleted capital. Also taxes are causing some money shortages.

Price softening is expected at the end of the first quarter of 1953 when supply is supposed to move close to demand.

Biggest control gripe is Dir. 3 to Order M6A which requires warehouses to hold 50 pct of receipts 15 days pending military requirements, although only 0.5 pct is being used by military in the West and 5 pct maximum nationally. Association was partially successful in getting modification.

**Now No. 1**—West Coast warehouses buy 26 pct of steel used in West compared to the 20 pct national average because of generally lighter type industry. Nationally, warehouse purchases temporarily have edged out restricted auto industry as the No. 1 buyer.

Western independent warehouses often sell each other steel to save needy customers from going to mill-owned houses which stress "we have everything." Both brood over bad name earned for industry by office-in-hat operators and brokers.

San Francisco Bay area is considered the roughest reinforcing bar market in U. S. with 18 fabricators in close competition.

National association is planning

group hospitalization and life insurance plan because most members are too small for economical single plant membership.

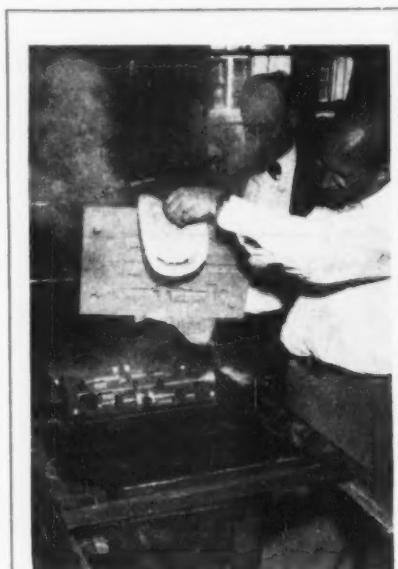
**Smog Clearing**—Bethlehem's Los Angeles plant last week revealed it had made a major stride in reducing air pollution from its three electric furnaces with electrostatic precipitators.

Although techniques of eliminating pollution from openhearth have been worked out in many U. S. cities under civic pressure, elimination of pollution from electrics has never been fully developed. Bethlehem's openhearth were torn down early this year and electrics substituted under pressure from civic authorities. Bethlehem's Los Angeles superintendent, Ray J. Tremblay, said last week "tests currently made on controlling emission from electric furnaces indicate the way it can be solved" and new equipment is on order.

**Most Promising**—Under pressure of several periods of grace from the Los Angeles county air pollution control district, Bethlehem has made several unsuccessful attempts with collection equipment experts to find a workable solution. The present and most promising device is the electrostatic precipitator which performed well in tests. Previously removal of 65 pct solids was accomplished, but board regulations now require 95 pct.

Armed with the promising results Bethlehem last week applied for another "extension of variance" from the board and hopes for completion of the new equipment in 60 days.

U. S. Steel at its Torrance works near Los Angeles spent \$600,000 last year for pollution control equipment for its four openhearth. About \$10.6 million was spent by all industries in Los Angeles County on pollution control equipment up to mid-1952.



**SHELL MOLDING:** Stanford Professor Frank K. Shallenberger removes newly formed shell mold from the hot pattern of shell-molding machine built by students of Stanford Graduate School of Business. The model machine was made to introduce the foundry practice to the West Coast.



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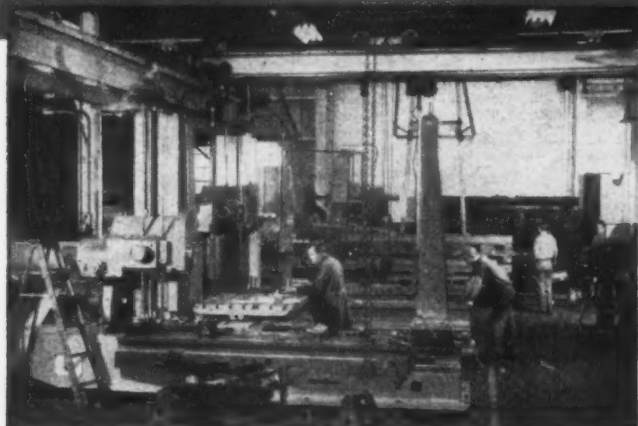
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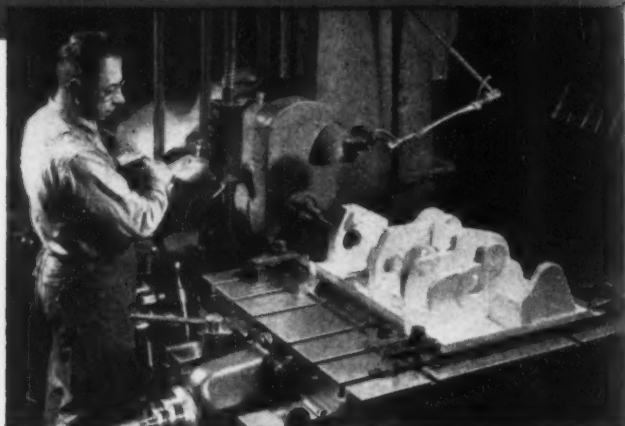
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## YEARS OF SPECIALIZATION

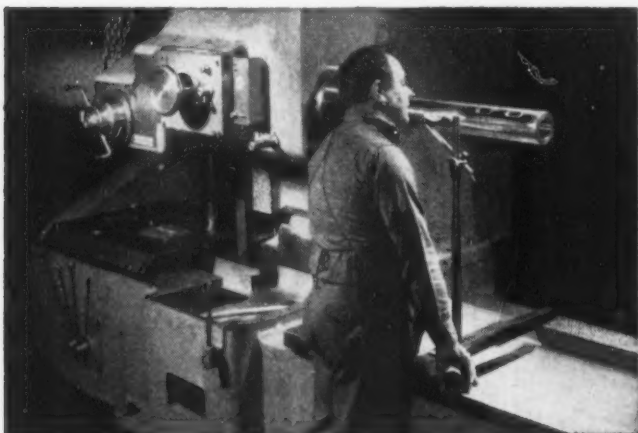
PAY DIVIDENDS IN  
THE DEFENSE EFFORT



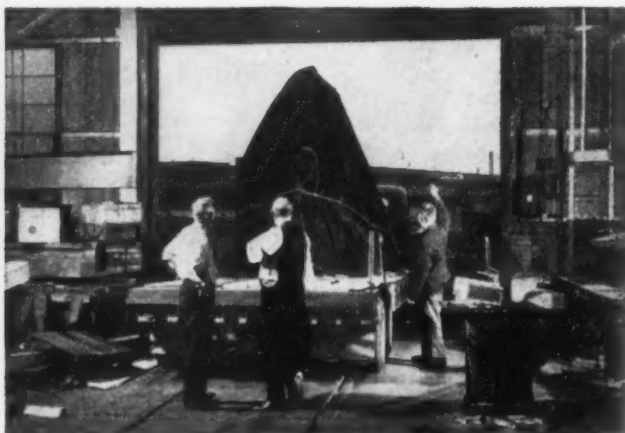
*Our expanded plant is operating at peak capacity producing horizontal Boring machines, NOTHING ELSE.*



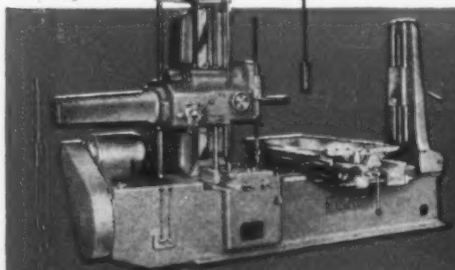
*In addition, many outside suppliers are helping us around the clock (using many a Lucas purchased from us in years past).*



*Because of half a century of specialization Lucas men maintain high Lucas standards despite vastly increased output.*



*More shipments than ever, but, of course, defense priorities dictate who gets what. Perhaps this is the machine we originally scheduled for you.*



**A LUCAS Precision**  
HORIZONTAL BORING DRILLING AND MILLING MACHINE  
*... is well worth waiting for*

*The most all-around useful machine in the shop—and your order or your inquiry are as welcome today as ever.*

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## Machine Tool High Spots

### Air Force Designs Still Fluid

**Indecision on Air Force part designs could make some new tools unusable . . . Many units might have to be revamped . . . Trade fears Z-2 priority may be rescinded—By E. G. Beaudet.**

One of the basic problems facing builders of machine tools for the Air Force is the fact that some design features of the Air Force program are still not definite.

Some manufacturers are building machines in accordance with part blueprints with no assurance that present part designs will not be changed before the machine is delivered. A few of them say they are making machines that may not be suitable if part designs are changed.

**Delayed Shipments**—While it is not expected that future design changes will make these tools entirely unsuitable, it could happen. The very least it would mean is that some machines now being built will, after completion, require changes in fixtures, tool holders and transfer equipment. This will take considerable time and will delay future shipments to the Air Force.

Reason for putting out designs before a part is finalized, says the Air Force, is to keep the program rolling without delays until final decisions are made. There is still considerable difficulty in getting final decisions on design.

**Plastic Dies** — Recent weeks have witnessed the first serious attempt by the automotive industry to make use of plastic dies. As yet there has not been enough experience gained in their use to assure complete acceptance. However, plastic dies do have certain characteristics that will assure them a serious trial.

Immediate impact of these plastic die programs is to put them in competition with Kirksite for

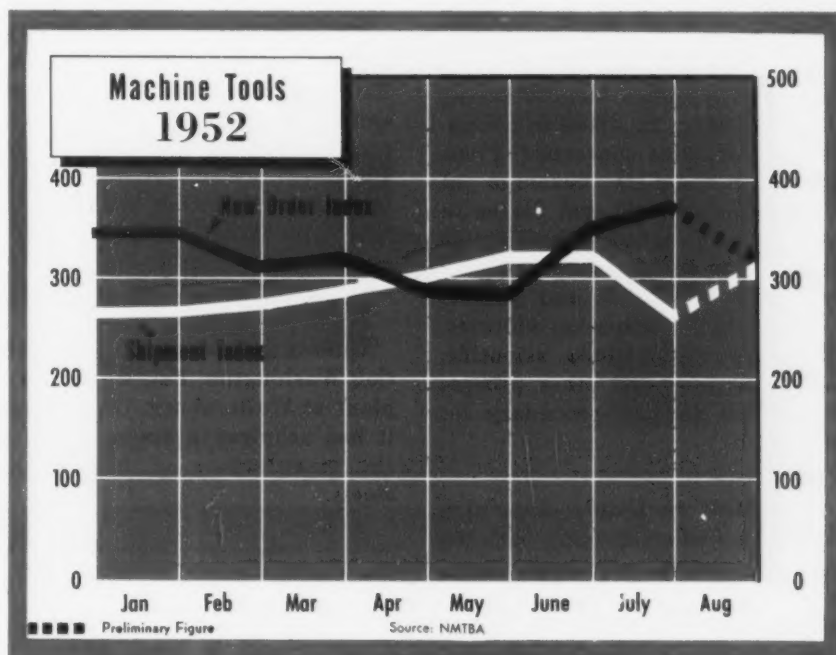
short run dies. There are practically no size limitations on the process and virtually no machining is required.

However, a more important advantage is the speed with which

running approximately 50¢ per lb.

Another of its advantages, however, is the fact that steel inserts and draw rings can be used in plastic dies to resist wear.

**No. Z-2?**—Rumors from Washington that the government may withdraw the materials priority now available to machine tool builders is causing quite a stir in the trade. The Z-2 order, which grants the priority, was largely responsible for the industry's



manufacturers can get into production with new sheet metal designs. One Detroit spokesman expects minimum tooling time for a sheet metal part to be reduced from 20 weeks to as little as 1 week as a result of using plastic rather than cast iron dies. Reduction in tooling time is the main factor causing automotive plants to give plastic dies a thorough trial.

One drawback to plastic dies is that the plastic material is not reusable and cost per lb is high—

reaching its present level of approximately \$100 million worth of machine tool shipments per month.

If the priority is withdrawn the industry will again be in the helpless position of trying to compete with larger companies for materials. The situation will revert to one similar to that before Z-2 was issued. Deliveries of machine tools will be expected to meet shipment dates. But the industry will have no assurance that it will receive the materials needed to make them.

### Join Forces to Get One Potent Firm

**Form new company to bring under one head manufacturing and marketing facilities of four firms . . . Plan to develop United Asbestos mine . . . Push plant building—By F. Sanderson.**

Three British companies have joined with Dominion Wheel & Foundries Ltd., Toronto, to form a new Canadian company, Dominion, Scott, Barron Ltd. It will be headed by Edgar E. Ritcey, president of Dominion Wheel & Foundries. The British companies will have representatives on the board of directors.

The new set-up brings under one head important manufacturing and marketing facilities of the various companies concerned. Plans envisage complete coverage of Canada and the United States in one sales program. The British firms provide the new company with special license and patents—plus, their production abilities. Products will include scientific, chemical, food and other process equipment for the secondary industry.

**Facilities on Hand**—Dominion Wheel & Foundries Ltd., with associated companies, has produced equipment for the railways, pulp and paper, mining and gas industries. It owns a large, modern machine shop and assembly facilities.

This company has specialized in the production of "Domite" alloy irons and the new ductile iron "Domite Noduloy." These special irons will be used in the manufacture of process equipment produced under the rights of the British firms.

British firms associated with the new enterprise include Henry Balfour & Co. Ltd., Leven, Fifeshire, Scotland; George Scott & Son (London) Ltd., and Ernest Scott & Co. Ltd., London, England, and W. S. Barron & Son Ltd., Gloucester.

**Develop Property**—United Asbestos Corp. has made an agreement with Lake Asbestos of Quebec Ltd., a subsidiary of American Smelting & Refining Co., under which Lake Asbestos will finance development of the United Asbestos property and bring it into production.

The agreement gives Lake Asbestos the right to examine United Asbestos' property and operations and to elect to equip the mine for production. If the terms of the agreement are carried out the new interests will bring the property into production with a milling capacity of at least 4000 tons of ore daily.

**Quality Steels**—The Jessop Steel Co., Washington, Pa., will build a plant at Wallaceburg, Ont., where it has acquired a 5-acre site, for the manufacture of high grade steels.



**Spur Schedule**—Construction crews are working double shifts, 6 days a week, to have the new \$17,500,000 nickel-copper refinery at Fort Saskatchewan, some 18 miles north of Edmonton in Alberta, ready for operation in 1954. The new refinery is a part of the big nickel-copper mining operation of Sherritt-Gordon Mines Ltd.

Meanwhile, Sherritt-Gordon is pushing work at its Lynn Lake, Man., nickel-copper property. This will provide the nickel and copper for the Fort Saskatchewan refinery. Power from the new Laurie River power project has been turned on at the mine and a second generating unit is nearly ready.

With electric power now replacing the diesel driven units, there will be an immediate step-up in the scale of mine development operations. Special attention is going to getting the orebodies in the "A" and "EL" areas ready for output.

**Steelmaking Rate**—Canadian production of both iron and steel is holding at a rate topping 1951. For the 7 months ending with July 1952 pig iron output was 1,559,306 net tons. It compares with 1,468,509 tons in the same period last year. Production of steel ingots and castings in the first 7 months of '52 totalled 2,208,323 net tons against 2,099,293 tons in the 1951 period.

Production of steel ingots and castings for July, 1952 was 293,408 net tons or 87.7 pct of rated capacity as compared with 305,455 tons or 94.4 pct for June, and 274,602 tons or 82.1 pct. for July, 1951.

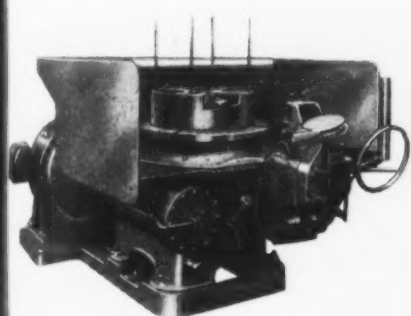
**First for Canada**—Canadian Pratt & Whitney Aircraft Co., is completing a new plant just outside Montreal which is expected to get into regular production before the end of this year. It is Canada's first aircraft piston-engine plant. Engines to be produced are the 600-hp. Wasp R-1340's, and are to be built under a Dept. of Defence Production contract.

to  
the  
largest  
bar

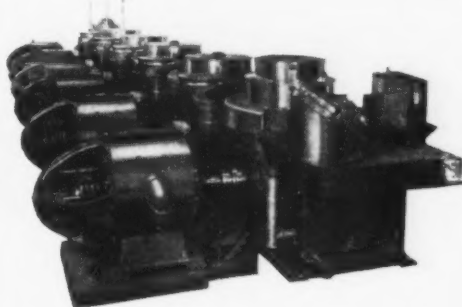
From the finest wire →



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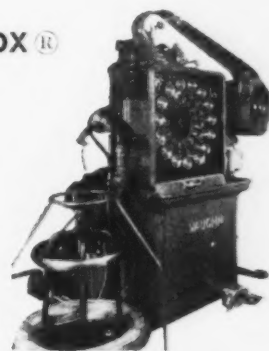


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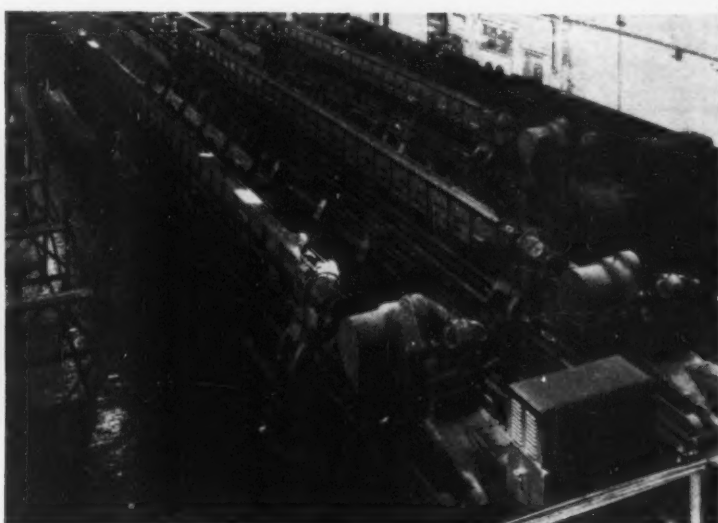


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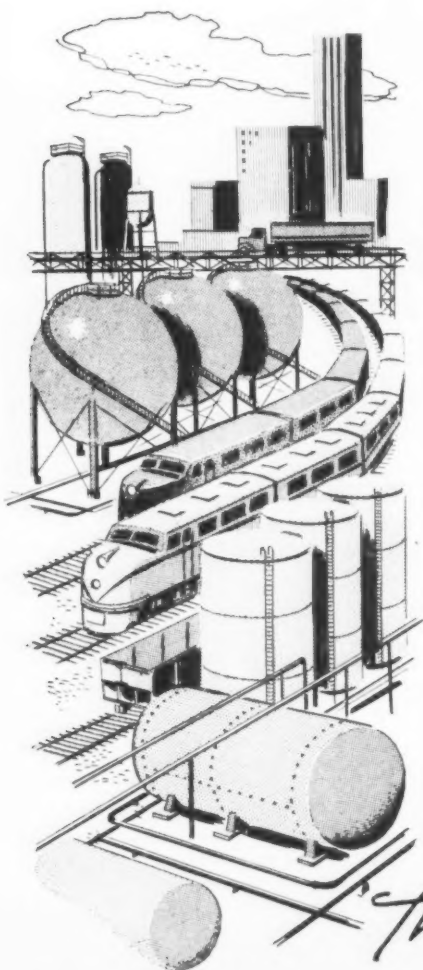
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COMPLETE COLD DRAWING EQUIPMENT . . . Continuous or Single Roll . . . for the Largest Bars and Tubes . . . for the Smallest Wire . . . Ferrous, Non-Ferrous Materials or their Alloys.

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## Superior INSUL-MASTIC Coatings



**1**

Insul-Mastic *superior* coatings provide extra long term protection. This is due to the superior ingredients from which they are manufactured and is attested to by Weather-O-Meter tests and actual field applications of many years duration.

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Insul-Mastic *superior* coatings keep surfaces dry. The moisture vapor transmission rate is only .01. This makes them ideal for vapor-sealing thermal insulation.

**4**

Insul-Mastic *superior* coatings can withstand temperatures ranging from  $-40^{\circ}\text{F.}$  to  $+300^{\circ}\text{F.}$ , without cracking or running.

**5**

Insul-Mastic *superior* coatings contain an extremely high percentage of solids and thus, can generally be built up to their specified thickness in a single application . . . and, their shrinkage on drying is greatly minimized.

*Think first of the coatings that last!*

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## Pressed brass

Basic design principles and new information on mechanical properties are combined with an analysis of cost and production factors in an interesting 32-p. manual on pressed brass and other nonferrous powder parts. Written primarily for designers, engineers and metallurgists, the new handbook is a concise reference source on factors that should be considered in designing and selecting small structural parts for fabrication by the powder metallurgy method. *New Jersey Zinc Co.*

For free copy circle No. 1 on postcard.

## Grinders

Mattison High-Powered Precision Surface Grinders in addition to handling regular flat work may be used for unusual grinding work at a great saving in time over other methods. The grinder's high power, wide range, large capacity and rugged construction make it an extremely versatile unit. Detailed information on the grinders is available in a new circular. *Mattison Machine Works.*

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## Precision machines

Die-less duplication is the outstanding feature of Di-Acro power machines. Seven different basic types of machines are available: benders, rod parters, shears, punch presses, notchers, brakes and rollers. The Di-Acro units produce an almost unlimited variety of precision parts without dies and are designed for both short run operations and high speed production. *O'Neil-Irwin Mfg. Co.*

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## Compressors

Heavy duty package types of Feather Valve Compressors from 75 to 350 hp are featured in a new bulletin published by Worthington Corp. Also included are illustrations and information on frames, running gear parts, cylinders, intercoolers, variable capacity controls and such accessories as after-coolers, receivers and suction filters. *Worthington Corp.*

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## Electrical connectors

Shatter-proof, distortion-proof electrical connectors for steel mills, foundries, scrap yards and other industrial needs are outlined in a new mailing piece available from Joy Manufacturing Co. These one-piece neoprene connectors in addition to being shatter-proof are also watertight and resist deterioration from sunlight, oils and acids. *Joy Manufacturing Co.*

For free copy circle No. 5 on postcard.  
Turn Page

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FIRST CLASS  
PERMIT No. 36  
(Sec. 34.9 P.L.&R.)  
New York, N. Y.

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### THE IRON AGE

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Village Station  
NEW YORK 14, N. Y.

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Continued

### Optical level

Designed for checking and leveling machine beds, surface and lapping plates, ground rolls, jigs, fixtures, airframes and other similar applications is the optical level described in a leaflet released by F. T. Griswold Mfg. Co. The level can be used to measure flatness, straightness and parallelism. Deviations from true horizontal can be measured to 0.00001 per in. of length or 0.00012 in. per ft of length. *F. T. Griswold Mfg. Co.*

For free copy circle No. 6 on postcard.

### Feeding table

Raymond Corp.'s 2000 lb model Hydraulic Sheet Feeding Table is reported to simplify work, reduce worker fatigue, increase production, cut handling costs and eliminate hazards. The feed tables are described in a new specification sheet. *Raymond Corp.*

For free copy circle No. 7 on postcard.

### Titanium

An extremely comprehensive 29-p. booklet on titanium and titanium alloys is available from Republic Steel Corp. Discussed in the publication are such topics as melting, processing, physical properties, fabrication and corrosion resistance of titanium. *Republic Steel Corp.*

For free copy circle No. 8 on postcard.

### Surface agents

Prepared as a guide to speed processing and lower production costs, a new 8-p. bulletin, *Surface Active Agents for the Metalworking Industry*, has recently been issued by E. F. Houghton & Co. The bulletin explains how efficiency of many metalworking applications can be improved and time and costs cut by the addition of a small percentage of a surface active agent. *E. F. Houghton & Co.*

For free copy circle No. 9 on postcard.

### Oxygen production

Described in a new 24-p. booklet are the Linde-Fraenkl oxygen and other low temperature separation processes. In addition to descriptions and flow sheets of the processes, information is given on typical plant layouts. A broad discussion of investment, power and operating costs is also provided. Based on long term experience and advanced design, the Linde-Fraenkl units offer a proven means of producing low cost tonnage oxygen. *Chemical Plants Div., Blaw-Knox Co.*

For free copy circle No. 10 on postcard.

### Conveyer idlers

Use of Rex-Roller-Bearing Belt Conveyor Idlers described in a new brochure insures minimum service cost and maximum equipment life. Belt friction wear is practically eliminated and the closely spaced, well-balanced roll units provide an idler assembly that saves wear on belts. Also outlined in the publication are belt conveyer trippers, rotary belt cleaners, and cast iron and steel conveyer pulleys. *Chain Belt Co.*

For free copy circle No. 11 on postcard.

### Magnetic separation

Magnetic separation is treated thoroughly in a new bulletin put out by Dings Magnetic Separator Co. Illustrated and described are magnetic separators for use above conveyer belts, in chutes and ducts, to remove iron from solids, semi-solids and liquids. Also listed are the company's lifting magnets for materials handling. *Dings Magnetic Separator Co.*

For free copy circle No. 12 on postcard.

### Chemicals

A leading producer of chemicals for surface coatings application, the Harshaw Chemical Co. recently issued a 15-p. pamphlet covering many of its chemicals designed for industrial and laboratory use. Among the chemicals discussed are catalysts, electroplating salts, fluorides, driers, metal soaps, and pigments. *Harshaw Chemical Co.*

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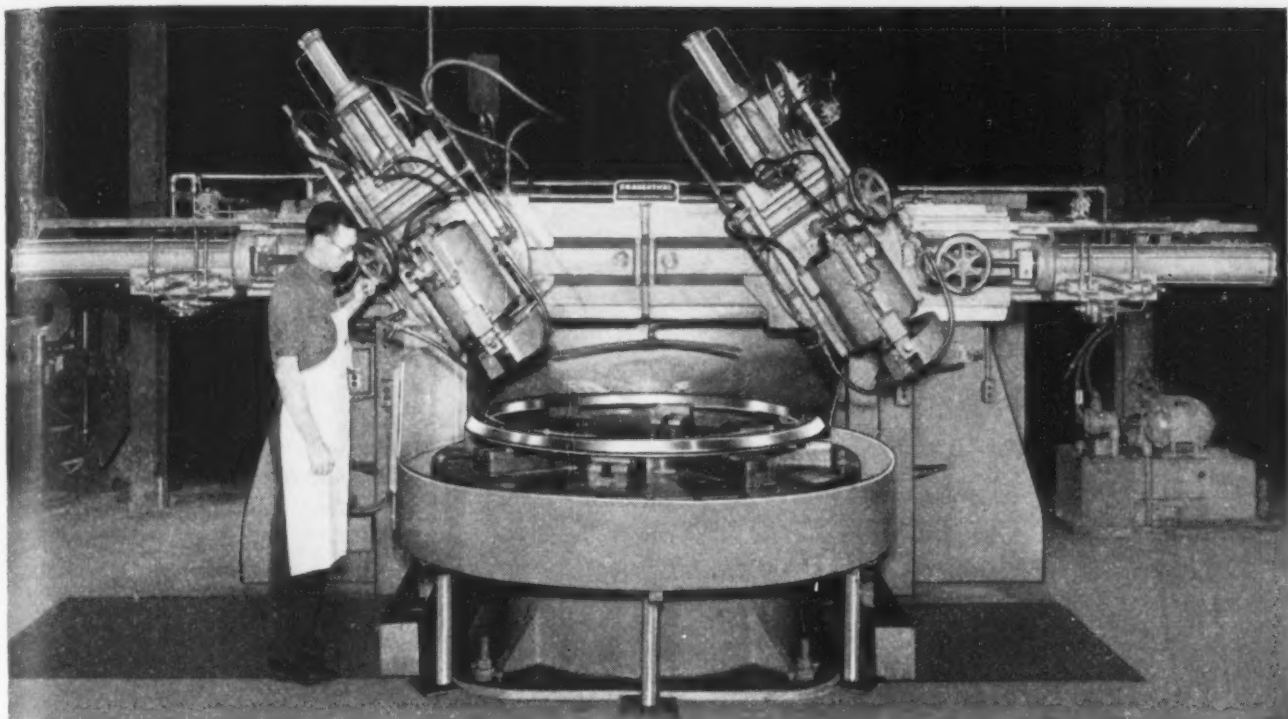
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THE IRON AGE

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This 2000 Series Frauenthal Grinder shows one of the many combination settings of the Grinding spindles for simultaneous super-precision grinding of related surfaces.

## What's Ahead in Grinding?

# Frauenthal TOP PRECISION!

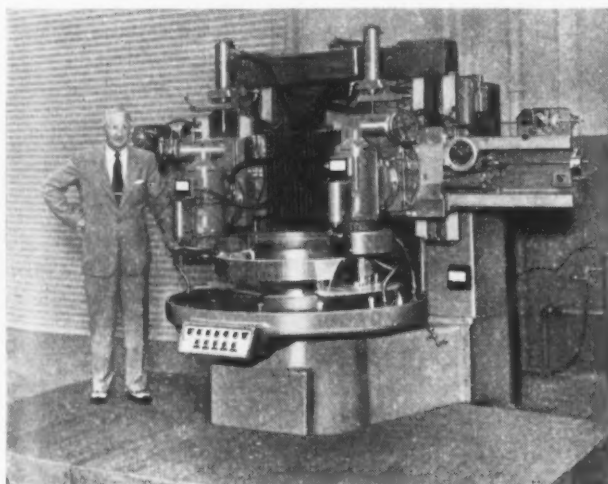
For super-precision grinding, up to 140" diameters and parallelism of faces, to the close tolerance of .0002", you will find Frauenthal Multiple-Head Cylindrical Grinders are unusual profit producers.

In precision angular grinding they consistently grind to less than .0005" in 72" in flatness, squareness, concentricity and taper.

You can adapt these grinders, with various heads, to light precision boring and turning. Because of their versatility and dependable accuracy they are money makers on large precision parts. They give you top-precision grinding control at low cost. They are performance-proved, in actual service since 1942. If you have precision problems on big parts, investigate Frauenthal Grinders.

In 10 Standard Sizes • Conforming to Essential J. I. C. Specifications

Series	Table Sizes	Maximum Swing
<b>1800</b>	30"	56"
	36"	56"
	42"	56"
	48"	56"
<b>2000</b>	60"	72"
	72"	88"
<b>2200</b>	100"	120"
	120"	130"
	130"	140"
	140"	150"



No. 1800 Series Frauenthal Grinder

Ask for Bulletin

**FRAUENTHAL Division**

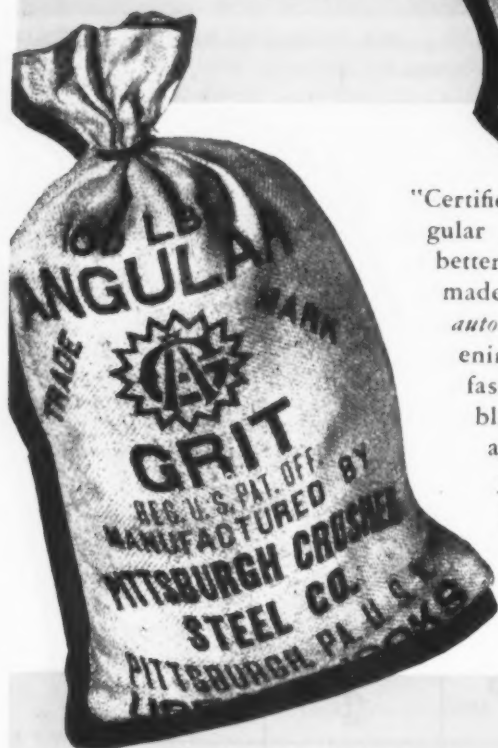
THE KAYDON ENGINEERING CORP.

930 WEST SHERMAN BLVD. • MUSKEGON, MICHIGAN

★ GRIND OUTSIDE • INSIDE • and FACES SIMULTANEOUSLY ★

# CERTIFIED ABRASIVES

CLEAN  
and  
CLEAN  
and  
CLEAN  
and  
CLEAN!

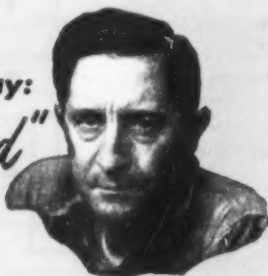


"Certified" Samson Shot and Angular Grit wear longer, clean better! That's because they're made *extra-tough* by a special *automatically controlled* hardening process that assures you fast, efficient, high-quality blast cleaning over and over again. Try "Certified" in *your* cleaning room and you will discover why it is the *first choice* in hundreds of foundries.

All sizes graded to  
SAE specifications.

Experienced Foundrymen say:

*"Always specify Certified"*



PITTSBURGH  
CRUSHED STEEL CO.  
Pittsburgh, Pa.



STEEL SHOT  
AND GRIT CO.  
Boston, Mass.

## Free Publications

Continued

### Rocks to diesels

A new pocket-sized booklet is available containing information on the history of the Ingersoll-Rand Company and its products, ranging from rock drilling equipment to gas and diesel engines. Profusely illustrated, the booklet is interesting and informative. Other IR products described are air and electric tools and hoists, air and gas compressors, centrifugal compressors and blowers, pumps and other equipment. *Ingersoll-Rand.*

For free copy circle No. 14 on postcard, p. 69.

### Save melting fuel

*Here's How to Save Melting Fuel*, a new 6-p. report, tells where to watch for heat losses on the way from melting furnaces to molds and what to do about them. Points discussed are heat losses at tap holes and spouts, in mixing ladles and during preheating and reheating operations. *Whiting Corp.*

For free copy circle No. 15 on postcard, p. 69.

### Air cylinders

Miller Motor Co.'s line of air cylinders is covered in a new 8-p. bulletin which contains engineering, design, construction and mounting data. Included are mounting drawings and dimension tables for 13 different mounting styles in 1½ in. through 14 in. bores. The cylinders described come in a variety of models including cushioned and non-cushioned, single and double acting, single and double rod end, spring return and oversized rod cylinders. *Miller Motor Co.*

For free copy circle No. 16 on postcard, p. 69.

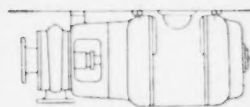
### Heat-treat furnaces

Direct, fuel-fired furnaces for all types of heat-treat processing are the subject of a new leaflet issued by Surface Combustion Corp. Practical applications of direct fuel-fired batch and continuous furnace designs for both ferrous and non-ferrous industries are shown, and basic operating data is given for each. General information is also included on convection heating. *Surface Combustion Corp.*

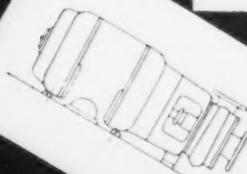
For free copy circle No. 17 on postcard, p. 69.

# SQUEEZED FOR SPACE?

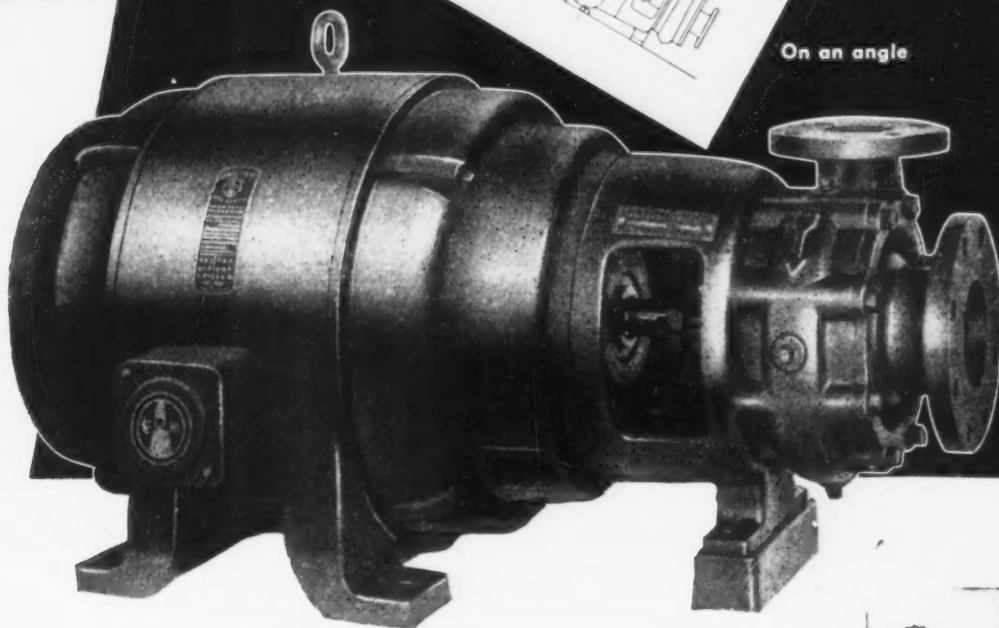
Fits anywhere  
—any way



Upside down



On an angle

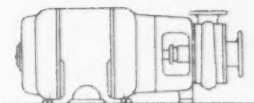
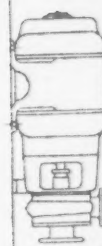


**If plant expansion** pains have you squeezed for floor space, Fairbanks-Morse *Builtogether* Centrifugal Pumps can help solve your problems.

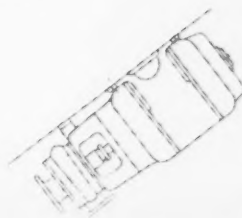
These compact, efficient pumps can be mounted horizontally, vertically, or on an angle . . . on the floor or from the ceiling. Backed by the Fairbanks-Morse reputation for quality, these pumps will always deliver outstandingly dependable performance. An important extra advantage to you is the fact that both motor and pump are built by Fairbanks-Morse . . . your assurance of efficient service.

Fairbanks-Morse *Builtogether* Pumps are available in both single and two-stage models . . . in capacities up to 1000 gallons per minute against heads up to 550 feet. For complete information, see your local Fairbanks-Morse Branch, or write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

Vertically



Horizontally



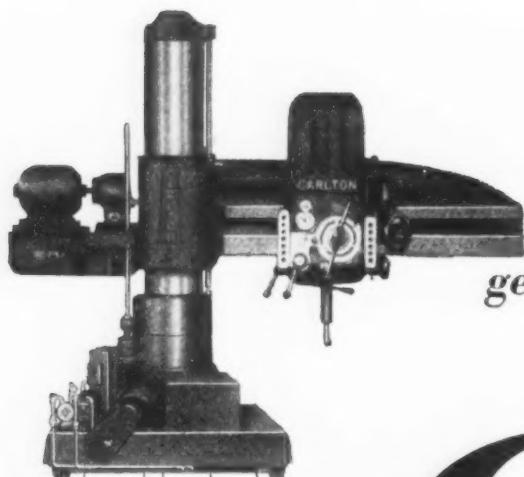
Angled  
upside down



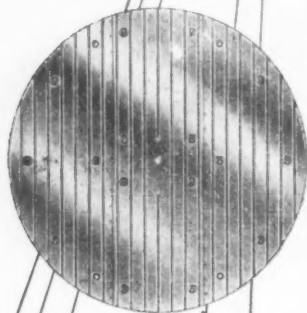
## FAIRBANKS-MORSE,

*a name worth remembering*

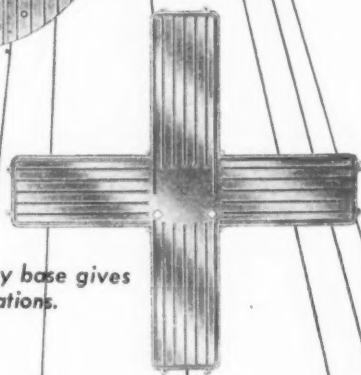
PUMPS • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • SCALES  
HOME WATER SERVICE EQUIPMENT • RAIL CARS • FARM MACHINERY • MAGNETOS



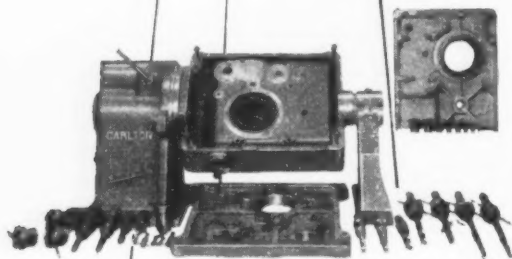
*Track-type mounting for long, straight sweeps.*



*Full round base gives ample space for large work pieces.*



*4-way base gives four work stations.*



*Revolving jigs and fixtures give better drilling results faster.*

*get production flexibility  
and speed with*

# Carlton

*radial drills,  
special bases and revolving jigs*

When you buy Carlton, you get the widest possible choice of radial drill capacity . . . for there are 4 different models with an almost unlimited number of column and arm sizes.

And special track-type mounting, seven different types of stationary bases, plain or uni-tilt tables, and revolving jigs . . . are available at slight additional cost . . . to help you increase your hole production.

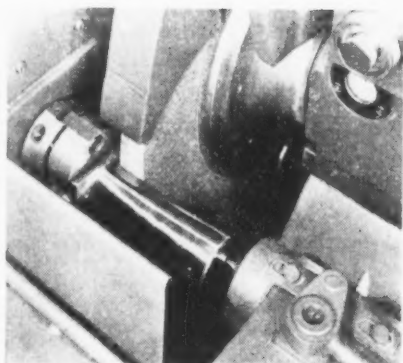
For complete information, send today for descriptive bulletins.

THE CARLTON MACHINE TOOL CO., CINCINNATI 25, OHIO, U. S. A. THE CARLTON MACHINE TOOL CO.



# NEW equipment

New and improved production ideas, equipment, services and methods described here offer production economies . . . fill in and mail postcard on page 69 or 70.

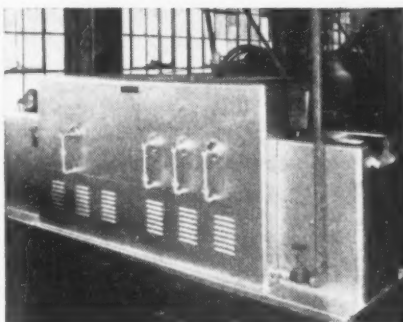


## Five surfaces ground in one operation

This new semi-automatic grinder has been designed for rapid precision grinding of all types of blades, buckets, faces and nozzles being used in jet engine designs. Uniform workpieces in size and shape are produced. The machine will grind, with a 24-in. diam wheel, the leading and trailing edges, the external airfoil surface, platform and platform radius. Twisted,

warped or broken back contours, straight contours and blades with parallel or nonparallel sides can be precision ground. The grinder uses a rocking cradle and master cam. As the grinding wheel traverses along the workpiece, the follower moves along the master cam. A variety of cycles may be had. *Landis Tool Co.*

For more data circle No. 18 on postcard, p. 69.

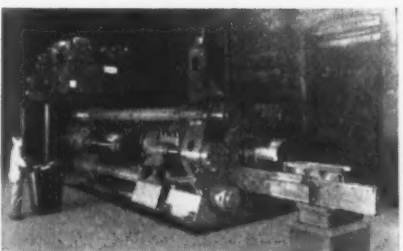


## Furnace anneals brass stampings between draws

Annealing brass stampings between draws is accomplished in a new continuous annealing furnace. The furnace is gas-fired by eight burners with individual mixers. Combustion blower, control valve, gas regulator, and variable drive mechanism are mounted within the casing. A small, rubber tired

wheel drives the belt by pressing it against a large ball-bearing mounted idler pulley. Temperature control instrument is mounted on the loading section. This furnace can be built in various sizes and for many different applications. *Waltz Furnace Co.*

For more data circle No. 19 on postcard, p. 69.

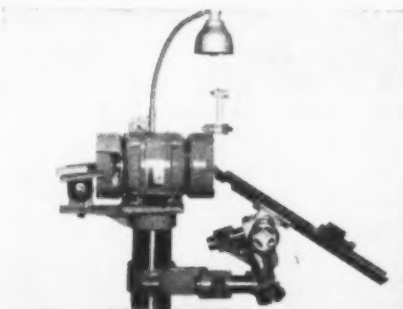


## Extrusion press has capacity of 3000 tons

Design of a huge self-contained oil-hydraulic extrusion press provides for stepless adjustment of the extrusion speed from both the main operating pulpit and from an auxiliary control stand at the platen exit. The press with its in-

duction heating furnace works half automatically and requires a minimum of operating personnel. The installation was specially designed for the extrusion of magnesium and magnesium alloys. *Hydropress, Inc.*

For more data circle No. 20 on postcard, p. 69.



## Drill grinder has 1/8 to 2 1/2 in. capacity

Recent improvements in the Sterling Model D drill and carbide grinder include increased capacity to cover all sizes from 1/8 to 2 1/2 in. The drill grinder does not use collets or chucks. The drill is located against the lip being ground to assure greatest accuracy and the adjustment for drill size is a sim-

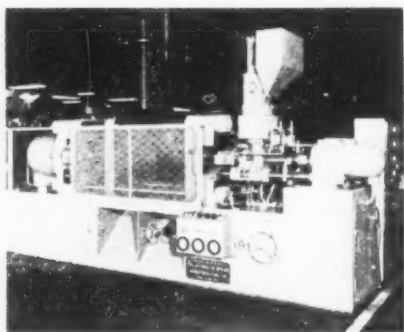
ple one. Clearance angle may also be easily adjusted as required. A built-in diamond wheel dresser is standard equipment and another new feature is automatic compensation for wheel wear. *McDonough Mfg. Co.*

For more data circle No. 21 on postcard, p. 69.

Turn Page

## New Equipment

Continued



### Pre-plasticizer has 48 oz shot capacity

This injection molding machine which plasticizes the molding powder before it contacts the injection plunger is a new machine designed especially for pre-plasticizing. It has a 48 oz shot capacity, high injection speed, a mold clamp capacity of 400 tons, daylight opening of 54 in., 30-in. mold clamping stroke and large mold mounting

space. Model 400-P-48 produces parts up to 14 in. deep. With a quickly installed ram spacer is suited for shallow parts. Faster plasticizing rates, lower injection and clamping pressures, strain free parts, and better color dispersion for dry coloring are other advantages. *Hydraulic Press Mfg. Co.*

For more data circle No. 22 on postcard, p. 69.

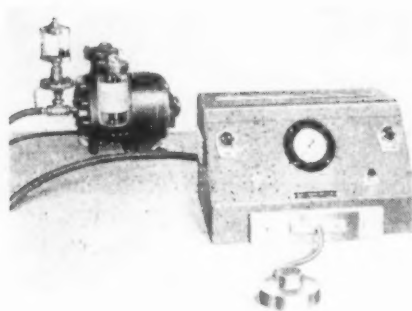


### Truck facilitates hauling structural steel

Named the Flat Top, a new truck has been designed for hauling and handling structural steel and pipe. Its narrow cab, 32 in. wide x 5 ft long is set on the left of the flush deck or truck bed making available an additional area of 5 ft for the

payload. Side loading and unloading are easier and faster. Engine is installed beneath the flush deck. A 4-wheel model has a 10-ton capacity with 185 sq ft of deck; a 30-ft long 6-wheel model offers 225 sq ft of deck. *Murty Brothers.*

For more data circle No. 23 on postcard, p. 69.

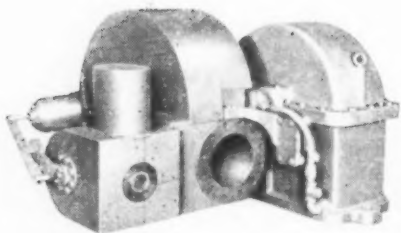


### Vacuum tester is easy to operate

Unskilled labor can run vacuum tests with a new inexpensive, versatile vacuum tester. It can test such items as shaft seals, diaphragms, cylinders, bellows, small fuel tanks. Tests can be run to reveal porosity or surface fissures, or surface flatness. The complete unit comprises a vacuum pump and

an instrument panel with an attached testing plate. Plate size and composition are standard, but both may be varied to meet specific testing requirements. Vacuum adjustment and time cycle adjustment are independent of each other. *Gits Bros. Mfg. Co.*

For more data circle No. 24 on postcard, p. 69.

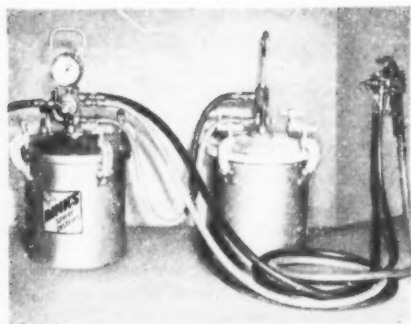


### Reduction gears for mechanical drive turbines

New high-speed reduction gears for mechanical drive turbines are available in built-in or coupled designs. Built-in gears include Elliott turbine and gear case firmly secured together, with turbine wheels and pinion mounted on the same sturdy, high-speed shaft. This eliminates

exhaust-end bearing and coupling, permitting a compact unit of minimum overall length. The coupled design is a self-contained gear unit which is flexibly coupled to a separate turbine drive. Gear ratios are up to 5:1 for built-in units; to 8.5:1 for coupled design. *Elliott Co.*

For more data circle No. 25 on postcard, p. 69.



### Catalyst gun sprays resin paints

Developed for application of resin paints a new spray painting gun mixes a catalyst with the paint a split second before it strikes the surface. Blending of the paint and the catalyst is accomplished with a dual-feed head on the gun. Because of the rapidity with which the paint sets up after the catalyst is

added, the two are blended after they leave the gun. The spray gun is a heavy-duty production gun with the precision catalyst feed system added. Hook-up for the painting system consists of the gun, air line, lines for paint and catalyst, two pressure tanks, and gages and fittings. *Binks Mfg. Co.*

For more data circle No. 26 on postcard, p. 69.

## Copper-clad steels

Copper-clad steels combining the advantages of both copper and steel in plate form is available as a new engineering material for use in industrial equipment. The advantage of solid copper—specialized corrosion resistance and electrical and thermal conductivity—have been retained in copper-clad steels, and the strength, rigidity and economy of steel have been added. Copper-clad steel consists of a layer of predetermined thickness of copper permanently and uniformly bonded to one side of a carbon steel backing plate. It is available in forms to fit every need and it can be sheared, formed, rolled or welded according to standard procedures. *Lukens Steel Co.*

For more data circle No. 27 on postcard, p. 69.

## Snap-in welding heads

Thirteen new welding heads fit interchangeably on Purox W-202 and W-201 blowpipes. No wrench is needed to get a firm, gas-tight seal between the blowpipe handle and welding head. Heads snap in or out of either blowpipe with one easy hand motion. Two synthetic rubber O rings eliminate all metal-to-metal gas seals between head and blowpipe, and make this quick-changing feature possible. *Linde Air Products Co.*

For more data circle No. 28 on postcard, p. 69.

## Overhead cranes

A new line of standardized overhead electric traveling cranes from 1 to 20 tons capacity provide adequate crane service for average industrial requirements. Three distinct types are available. They feature anti-friction bearings throughout; rotating axles on bridge and trolley; variable speed magnetic control operated by pushbutton on floor controlled cranes, and by master switches mounted in a pulpit type cage on cage controlled cranes. All gears operate in oil in sealed housings. These cranes are available with variety of speeds and heights of lift. *Shaw-Box Crane & Hoist Div. Manning, Maxwell & Moore, Inc.*

For more data circle No. 29 on postcard, p. 69.

Turn Page



**READY-POWER BRINGS**  
*Diesel Electric* **POWER**  
**TO USERS OF HEAVY-DUTY TRUCKS**

FEATURING:

- OPERATING ECONOMY
- GREATEST DURABILITY
- LOWEST MAINTENANCE

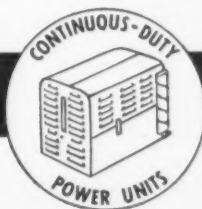
You can save **REAL** money on the operation of electric trucks. Ready-Power DIESEL-Electric drive is the answer. Actual tests prove savings of 40% to 70% in operation and maintenance. Rugged DIESEL design provides *more* work per gallon of fuel, *longer* life span and *less* maintenance. And Ready-Power DIESEL-Electric Units provide the most efficient, most constant, most economical power source for electric industrial trucks.

Remember...Your Truck Is No Better Than Its Power!

**The READY-POWER Co.**

3822 Grand River Ave., Detroit 8, Michigan

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks





**J**UST as the professional architect saves by proper planning and supervision when you build a home or factory—so will experienced engineers at Worcester Stamped Metal, save time and money, when you plan parts or products shaped from metal.

Here, trained craftsmen use both technical and practical knowledge to design and build tools that will eliminate unnecessary operations and develop the greatest operating efficiency. These tools are put to work on the most modern equipment, to produce light, heavy and deep drawn stampings from any of the common metals and alloys—for "on-time" deliveries.

If you have a metal stamping problem . . . it will pay you to investigate this complete and dependable service.



**WORCESTER STAMPED METAL**

*Company*

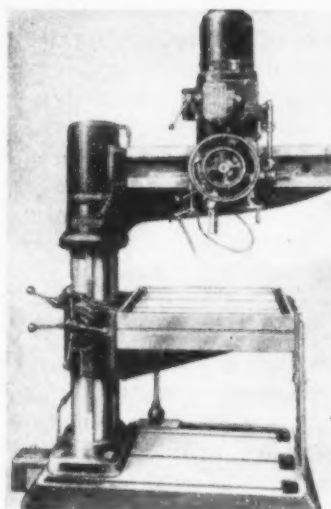
10 HUNT ST., WORCESTER, MASS., U. S. A.



SPECIALISTS IN SKILLED STAMPING SERVICE

## New Equipment

Continued



### Radial drill

The Richmond SR2 radial drilling machine with 4 ft x 9 in. column has 1¼-in. capacity in mild steel. The arm does not elevate, but can swing 360° instead. Table can be elevated and lowered and can also swing 360°; can swing out of the way for positioning larger capacity work on the base of the machine. The arm is box section and the head mounting is unusual, located in a V at the bottom and having a bearing on the top of the arm for its complete width, providing more rigid support of the head. Rotation of the arm around the column is fingertip controlled. Spindle speeds range from 100 to 1500 rpm. Feeds are 0.005, 0.010, and 0.015 in. Motor is 2 hp and Morse taper is No. 3. *British Industries Corp.*

For more data circle No. 30 on postcard, p. 69.

### Pallet truck

A 4000-lb capacity high lift pallet truck will transport and stack skid bins or single-face pallets, at heights to 120 in. Side caster wheels provide stability and constant floor contact under all operating conditions. Pallet forks are used instead of conventional forks for minimum overall truck length and lowered fork height that will accommodate single face pallets. The truck is a Worksaver motorized hand model. *Yale & Towne Mfg. Co.*

For more data circle No. 31 on postcard, p. 69.

## Segmental saws

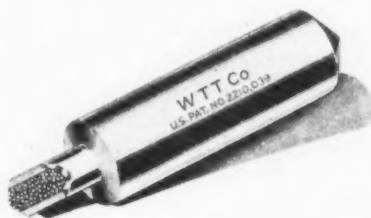
A new circular metal-cutting saw features segments which are locked together by flexible tightening pins instead of rivets. This design insures perfect alignment of the segments around the entire cutting edge, and gives longer life to the saw because there are no aligning rivets to limit sharpening. Quick replacement and automatic alignment of segments is possible. Disston Chromos segmental saws are available in diameters from 11 to 63 in., with various tooth spacings for cutting any ferrous or non-ferrous metals. *Henry Disston & Sons, Inc.*

For more data circle No. 32 on postcard, p. 69.

## Jaw inserts

Replacing worn gripping surfaces with jaw inserts is possible on the redesigned Ampco pipe wrench. Inserts are interchangeable in upper and lower jaws. Existing Ampco pipe wrenches can be modernized with a new upper jaw assembly and inserts. *Ampco Metal, Inc.*

For more data circle No. 33 on postcard, p. 69.



## Diamond grit tool

A new type diamond tool is designed for use in dressing thread grinding wheels and in replacement of the more conventional diamond pointed thread dressing tools. Models are for thread grinding machines that grind V or straight line threads either for production or gage work. Cutting element is a concentrate of selected diamond grits and Wheel Trueing's own alloy matrix, and presents a cutting face in any position. It needs only occasional turning to assure effective dressing work. *Wheel Trueing Tool Co. of Detroit.*

For more data circle No. 34 on postcard, p. 69.

Turn Page

There's an idea here for you!

## Lower your distribution costs with H & D corrugated boxes

Self-priming pumps, like thousands of other mechanical products, are economically and safely shipped in H & D corrugated boxes engineered for the job. In this instance, H & D boxes reduce packing material costs by 40%; lower shipping costs through a 25-pound weight reduction; cut 15 minutes-per-unit off original packing time. And, savings like these are not uncommon!

Qualified H & D Package Engineers can give your product, too, the definite advantages of corrugated boxes designed for your particular packaging operations. Write for complete information and a fact-packed 14-volume "Little Packaging Library." *Hinde & Dauch, 5223 Decatur St., Sandusky, Ohio.*

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*Their future is based on decisions made today. The secret of success at Indiana Gear is to visualize . . . create . . . prove . . . and then move on to conquer the next problem. Indiana Gear proves from past success in a highly competitive business that its policy of using master craftsmen, fine equipment, skilled subcontractors, and "young men of vision," exemplifies the perfectly coordinated planning so necessary to solve the gear problems of today.*



The driven gear shown here is 5" in pitch diameter and 15" long overall. It is carburized and hardened with heat-treating distortion held within .001".

## INDIANA GEAR



INDIANA GEAR WORKS • INDIANAPOLIS 7, INDIANA

### —New Equipment—

Continued

#### Vapor degreaser

Known as the Drum Major, an inexpensive vapor degreaser uses a readily replaceable standard 55-gal steel drum for the cleaning tank. The unit uses any of the modern vapor solvents for rapid degreasing and cleaning, eliminating hazard of cleaning with flammable liquid solvents. Condenser and heating units are externally mounted. Thermostatic controls automatically maintain correct vapor level. *Currier Co.*

For more data circle No. 35 on postcard, p. 69.

#### Tailored storage

Welded, all-steel drawer units, bolted together in scores of combinations, can be tailored to almost any shop or office space. With these units, storage space can be put where it is needed. *Standard Pressed Steel Co.*

For more data circle No. 36 on postcard, p. 69.

#### "Blazing" along

Production is said to be "blazing" along for Farrar & Trefts, Inc., since they began burning pressure-sensitive tape as part of their welding method. Used for submerged arc welding jobs, the tape—either Scotch brand pressure-sensitive tapes No. 710 or No. 365—holds flux in place while the initial stringer bead weld of seams on metal tanks and flues is being made. It is being used successfully on metals from 1/4 to 3-in. thick. Applied to the underside of seam openings, the tape burns off as soon as the metal becomes red hot. *Minnesota Mining & Mfg. Co.*

For more data circle No. 37 on postcard, p. 69.





### End-finishing machine

Stepped-up efficiency in handling a variety of reaming and inside and outside deburring operations on welded steel tubing is claimed for a new bench-type end-finishing machine. Speeds are said to approach special machine output. Savings in time are due to machine design which enables operator to clamp and feed the work to the cutting tools with a single forward movement of a hand lever. Workpieces are automatically released by reversing the hand lever. For depth of cut, an adjustable swing-type stop operated by the feed rack provides fast, accurate positioning and gaging. Changeovers from one job to another can be made usually in one minute. *Pines Engineering Co., Inc.*

For more data circle No. 38 on postcard, p. 69.

### Machine screw taps

New and improved Hy-Pro machine screw taps are said to have cut costs by giving longer service and better performance. All are for special work requiring over-size taps and taps with stronger type spiral point. Each handles a particular threading requirement: for plastics, aluminum and zinc diecast metals, and for alloy steels. They are available in standard sizes: 6-32, 8-32, 10-24, 10-32. A new spiral point, stub flute, hand tap is available in standard fractional sizes 1/4-1/2 NF & NC. *Hy-Pro Tool Co.*

For more data circle No. 39 on postcard, p. 69.

Turn Page

October 2, 1952

# Can You Check YES to these five questions?

- ☐ Do the gears you use have surface-hardened teeth?
- ☐ Are the cores tough, ductile, and shock-resistant?
- ☐ Do they always fit perfectly and require no run-in?
- ☐ Are they guaranteed to give maximum service life?
- ☐ Are you completely satisfied with them?

## If not, you should use -

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**ARMORED GEARS** are made only by PITTSBURGH GEAR from an exclusive formula perfected by PITTSBURGH engineers. It covers metal, machining, and a method of heat-treating that hardens the wearing surfaces but leaves the core tough, ductile, and shock-resistant.

All PITTSBURGH gears are made to extremely close tolerances to fit perfectly right from the start. They are guaranteed to give you five times the life of untreated gears, one to one and one-half the life of oil-treated gears, and equal or longer life than any other gear in identical service.

You can readily identify **Armored Gears** by their distinctive corrosion preventive coating — "**Pittsburgh Purple**."

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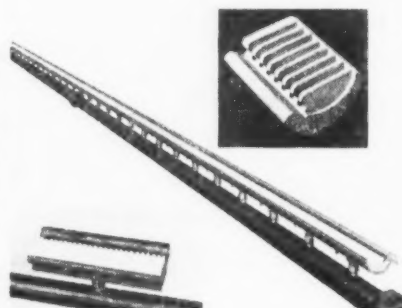
Monessen, Pa., Atlanta, Chicago, Denver, Detroit,  
Los Angeles, New York, Philadelphia,  
Portland, San Francisco, Bridgeport, Conn.

## New Equipment

Continued

### Line burner

After two years of research on the radiant heat principle for use in industrial ovens, Burdett engineers claim to have produced, under the name of Radi-Heat, a new concept of design incorporating several advances: maximum rate of heat transfer; complete combustion, with resulting fuel economy; reduced processing time; maximum uniformity of product; and minimum low cost maintenance. Sec-



tional refractory design affords more flexibility in application. Wide fanning radiation of the refractory is accomplished by open-faced design, which can be used in any desired length by the end-to-end mounting of the sectional burners on a common manifold. Maximum combustion efficiency is offered by wide range of mixture ratios and pressures. Capacities range from 7000 to 45,000 Btu/hr. *Burdett Mfg. Co.*

For more data circle No. 40 on postcard, p. 69.

### Proportioning pump

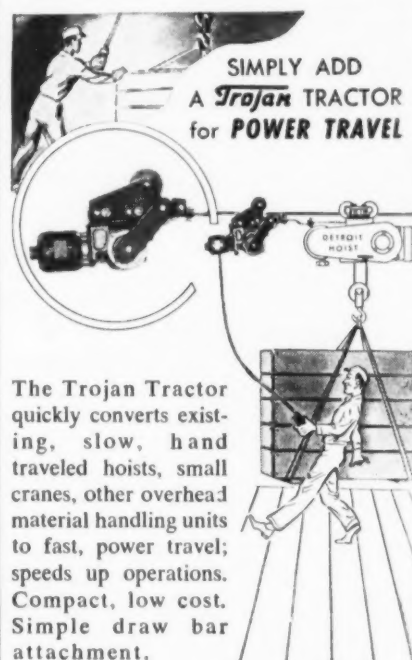
Displacement of all liquid in the cylinder at every stroke and stroke adjustment while the pump is running are featured in a new chemical proportioning pump. The stroke adjustment mechanism and the indicating scale are stationary when the pump is running. A mechanical linkage to the crank arm reciprocates the piston. Piston and cylinder assemblies of stainless steel or other alloys for 7500, 15,000 and 30,000 psi working pressures are readily interchangeable in the same pump frame. *American Instrument Co., Inc*

For more data circle No. 41 on postcard, p. 69.

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Facilities*  
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**SIMPLY ADD  
A Trojan TRACTOR  
for POWER TRAVEL**

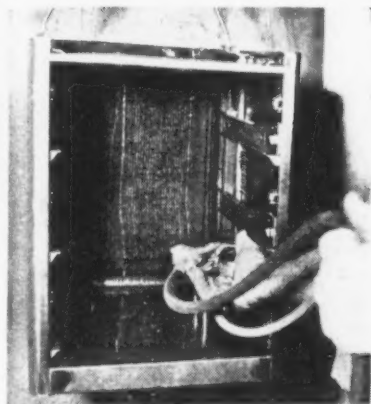
The Trojan Tractor quickly converts existing, slow, hand traveled hoists, small cranes, other overhead material handling units to fast, power travel; speeds up operations. Compact, low cost. Simple draw bar attachment.

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### Sound deadener

Production of Carey sound deadener Nos. 40 and 41 will permit manufacturers of light metal equipment to give their products a heavy solid feeling with sound hushing ability. The sound deadeners have a fluid consistency that makes them ready for instant application with a wipe-on tool or spray equipment. Their high solids content speeds drying time, and they can be baked at temperatures to 325°F without loss of bond, blistering, and flow. *Philip Carey Mfg. Co.*

For more data circle No. 42 on postcard, p. 69.

### Felt sealing tape

Felt sealing tape with a solvent-activated adhesive back permits application to cold metal and other ordinarily impossible surfaces. Strength of the adhesive provides a permanent bond rather than serving as an application aid only. Besides regular rolls, this product is available in pre-segmented rolls for production application of equal-size pieces. *Products Research Co.*

For more data circle No. 43 on postcard, p. 69.

### Laboratory planning

A kit permits custom installations of entire laboratory rooms without blueprints or conferences. Contents of kit include scaled cut-outs, representing 21 ready-made, pre-engineered steel furniture units. Cut-outs can be manipulated on the kit's graph paper. With complex laboratories, Fisher will set up actual furniture models on a submitted layout, photograph them. *Fisher Scientific Co.*

For more data circle No. 44 on postcard, p. 69.

Turn Page

# DURASPUN

30% Cr.  
20% Ni.  
1% Mo.



## Retort For Defense Project

Perhaps the most interesting feature of this Duraspun High Alloy Casting is that four different sizes of centrifugal castings are involved. These vary from 34" to 3 1/2" in diameter. Sections, outlets, collar bands, lugs etc., were all welded together in our shop to form the retort as you see it in the picture. Assembled weight runs around 7464 pounds.

**High alloy castings is our business**—not merely the adjunct of an extensive steel founding business. We have the experience—30 years in the static casting division and 20 years on centrifugal castings. We pioneered both kinds for castings in this country. And we have excellent testing and checking facilities, including a 400,000 volt X-ray machine and gamma-ray units.

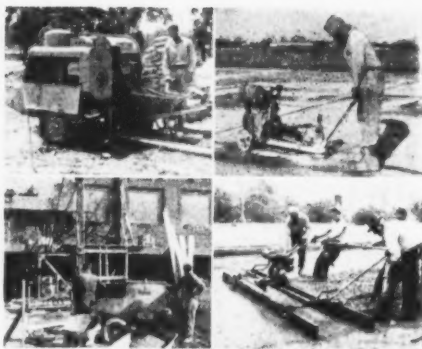
If you would like this combination of wide experience, modern shop practice, up-to-date equipment and full testing facilities working on your next high alloy casting, bring it to us.

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Because Wisconsin Air-Cooled Engines are supplied in a complete power range, from 3 to 30 H.P., in 4-cycle single cylinder, 2- and 4-cylinder types, there is an ideal size to fit all types of machines and power applications within this range, without wasted power and with maximum power service benefits. Heavy-duty construction, combined with extremely compact design and light weight are added advantages—and dependable AIR-COOLING permits trouble-free service under all climatic conditions.

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Single cyl.  
3 to 9 H.P.

2-cylinder  
7 to 13 H.P.

V-type 4 cyl.  
15 to 30 H.P.



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Die Steels—Hot Work and Shock Resisting Steels  
Carbon Tool Steels.



## New Equipment

Continued

### Vacuum line sealing

Vacuum line sealing problems are being solved by a new plastic gasket material. By adding 1/64 in. film or coating to flange faces and gasket surfaces leakage is said to be reduced to a minimum. Practice can be repeated over and over and the manufacturer reports the material will never harden, making flanges easy to dismantle after years of service. Formulated in two types: one for air, steam, water, mild chemicals; the other for oil, gasoline, solvents, etc. *Flexrock Co.* For more data circle No. 45 on postcard, p. 69.

### Plastic flooring

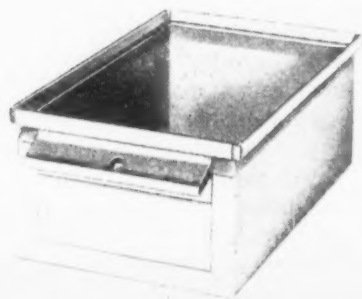
Repairing and resurfacing wooden floors is simplified with a new quick drying plastic flooring compound. Called Rezilio because of its resiliency, the product contains special cohesive resins which bind it firmly to wooden floor surfaces without the use of metal binders. Rezilio has a smooth hard surface which is easily trucked over and withstands heavy loads. Furnished ready to use without mixing or thinning. *Monroe Co.*

For more data circle No. 46 on postcard, p. 69.

### Stacking boxes

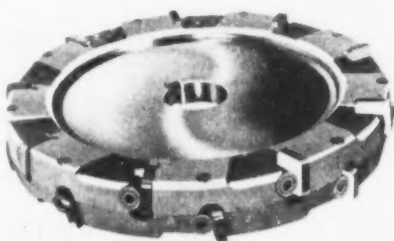
Straight side stacking boxes of sheet metal insure quick and safe handling of material during shop production operations; can be piled and stored in a minimum of space. Heavy steel handles with hook holes are welded to each end of the box. Eight standard sizes range up to 22 in. long x 12 in. wide x 8 in. high. Material weight, 16, 18 and 20 gage steel. *Platt & Labonia Mfg. Co.*

For more data circle No. 47 on postcard, p. 69.



## Straddle milling

Staggered tooth, indexable solid carbide blade, side milling cutters have been added to the line of Futurmill cutters. Illustrated is a 9-in. 18 blade staggered tooth side milling cutter designed to mill  $1\frac{1}{2}$  in. wide slot in an armor casting. Solid carbide blades have  $\frac{1}{8}$  in. radius ground on each corner;



when dull can be indexed to another cutting position. Eight indexes are possible. Minimum width of cutter is  $1\frac{1}{2}$  in. where teeth are staggered, but straddle mills for cutting on one side only can be made to a minimum thickness of 1 in. *Detroit Milling Cutter Co.*

For more data circle No. 48 on postcard, p. 69.

## Adjustable steel prop

Loads up to 10 tons can be supported on a new steel prop that consists of a cylindrical ram filled with flat steel slugs. When the ram is lifted slugs fall into outer cylinder to form a solid mass of steel on which ram rests. Props range from  $2\frac{1}{2}$  to 8 in. high; when fully extended measure from  $3\frac{5}{8}$  to 12 in. high. They are useful to prop open a press or die set; as a support for a hold down clamp. *Lempeco Products, Inc.*

For more data circle No. 49 on postcard, p. 69.

## Revolving carriage

Rotating heavy loads  $360^\circ$  in either direction, the Towmotor revolving carriage is an accessory that handles solid, liquid or granular materials with equal effectiveness. Mounted on the forks, a container can be completely emptied in approximately 5 sec. Speed and direction of rotation can be controlled with a touch. The accessory permits dependable handling of loads for container-to-container transfer. *Towmotor Corp.*

For more data circle No. 50 on postcard, p. 69.

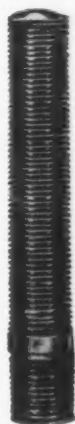
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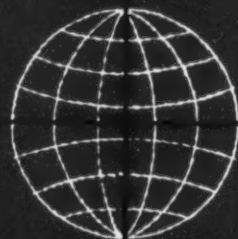
Dobeckmun Barrier Materials have proved their superiority in flexible military packaging everywhere, from the sizzling heat of the tropics to 65° below zero . . . remaining flexible, grease-proof, acid-free and non-corrosive at all times. Whether the packaging is done at government agencies, by contract or export packers, or in assistance with converters who fabricate bags, pouches or containers, Dobeckmun's Metalam Barrier Materials qualify under these specifications.

MIL-B-131A, Classes A & B  
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MIL-E-6060, Type II

MIL-B-7841 (Aer),  
Classes 1 & 2  
AN-B-20, Type II  
JAN-P-117, Type II,  
Grade A, Class d

JAN-P-131, Amendment  
3, Type I, Classes A & B  
JAN-P-131, Type I,  
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# *The* **Iron Age**

## **SALUTES**

*Carl G. Rosen*

His combination of engineering skill and ability to get along with people saved an industry.



**I**N 1933 disaster hit the diesel tractor industry. Ring sticking became a plague and engine conk-outs after only 300 hr service were common. Sales were plummeting, and the harried Caterpillar Tractor Co. called on one of its consulting engineers, Carl Rosen, to end the crisis.

After extensive research, Carl determined that there was nothing wrong with the diesel engine design he had helped develop. He discovered the engine failures were the result of a new refining method adopted by the oil companies which changed the composition of the oil. Since the new oil provided certain improvements, he decided the only remedy was to add cleaning fluid to the lube oil.

Tests proved that he was right. But talking the refiners into changing their methods remained a tough obstacle. Carl was buttonholed to do the persuading, since, in addition to his engineering skills, he has a marked talent for getting along with people.

After conferences with oil company executives, in which his personal charm was as important as his engineering knowledge, he succeeded.

The cooperative spirit that exists today between the petroleum industry and the Caterpillar Tractor Co. stems from Carl's handling of this impasse. And because of this and other triumphs Carl was made company research director.

Illness forced him to give up this post in 1949, but he's still making important contributions to Caterpillar as consulting engineer.

Carl's neighbors in Peoria, Ill., hold him in high esteem for his enthusiastic participation in community activities. One of his hobbies is making his town a nicer place to live in and, as in everything else, he's having success.

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# ZIRCONITE<sup>\*</sup>

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Outstanding results are reported for TAM ZIRCONITE Paste Wash in diversified applications by many leading foundries:

**CORE MUD...**to prevent metal cutting into joints between core halves (slightly thinned).

**CORE PATCHING...**to patch up cracked or broken cores (without diluting).

**CORE WASH...**for dipping, spraying or brushing cores in green or baked state.

*Among important advantages...*any washing solution made from TAM ZIRCONITE Paste Wash can be used *immediately after preparation*. Resistance to settling eliminates need for constant agitation.

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➡ For detailed information, write our New York City office. Supplied in easily-handled steel drums of various sizes.

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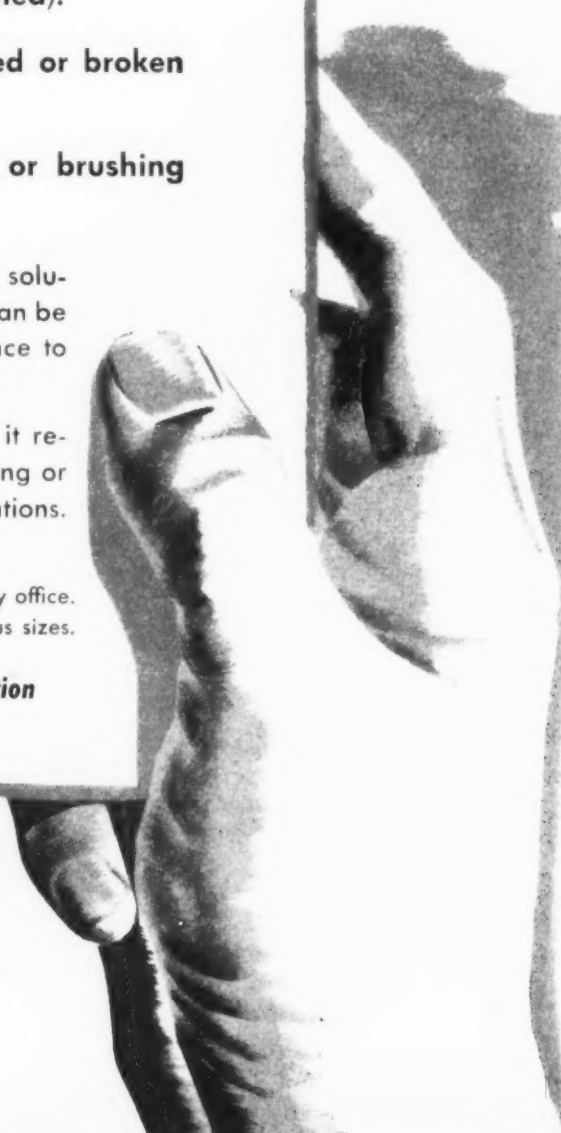
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# *The* **Iron Age**

## INTRODUCES

Walter S. Maranuk, named a vice-president, H. A. Stevenson, Inc., Detroit distributor of THE BAKER-RAULANG CO.

Robert L. Holt, appointed vice-president, BOWSER, INC.

Merle E. Kremer, appointed assistant to the president, ALLIED PRODUCTS CORP.; Wynne R. Lilly, named supervisor of New Product Development; Milton M. Stenstrom, is directing employee and personnel relations.

Capt. A. C. Olney, (U. S. N. Ret.), appointed special assistant to president, TEMCO AIRCRAFT CORP., Dallas.

Alex Montgomery, Jr., appointed assistant to vice-president—rolling mills, U. S. STEEL CO., Pittsburgh; J. J. Farrell, named assistant treasurer; and Arthur E. Dieckman, made assistant comptroller.

Wilbur Gardner, elected a vice-president, DeWALT INC., subsidiary of American Machine & Foundry Co.

Charles Schwartz, appointed assistant vice-president, STRONGHOLD SCREW PRODUCTS, INC., Chicago.

Don Stewart, named administrative assistant to the president, ROYLYN, INC., Glendale, Calif.

E. M. Webb, elected a member of the board of directors, THE DUFF-NORTON MFG. CO., Pittsburgh.

S. Frederick Magis, named steel technologist, ARMOUR RESEARCH FOUNDATION of Illinois Institute of Technology, Chicago.

O. H. Tiedeman, elected to the board of directors as vice-president in charge of sales, WAGNER BROTHERS, INC.

Ervin B. Owens, appointed personnel director, Ajax Metal Div., H. KRAMER & CO., Philadelphia; and Ralph Babuscia, appointed purchasing agent, supplies.

Robert D. Schliem, promoted to chief inspector, C. A. NORGREM CO., Englewood, Colo.

Franklin B. Stockton, appointed assistant to the chief industrial engineer, JONES & LAUGHLIN STEEL CORP., Pittsburgh.

John E. Lancaster, appointed assistant chief engineer, Air Conditioning & Refrigeration Engineering Div., WORTHINGTON CORP., Harrison, N. J.; William C. Osborne, named manager, and Norman L. Myerson, made assistant manager Research & Development Dept.; Frederick C. Gilman, appointed research engineer; and T. A. Herman, named assistant chief engineer.

John H. Lindemuth, appointed works manager, Chalmette plant, KAISER ALUMINUM & CHEMICAL CORP., and C. P. Love, named plant manager, Tacoma, Washington.

Fred W. Scott, Jr., appointed manager, newly established Merchandising Sales Div., THE CARBORUNDUM CO., Niagara Falls, New York.

Joseph P. Lencioni, appointed superintendent, Cold Roll Dept., KAISER STEEL CORP., and William J. Cox, appointed assistant superintendent, conditioning yards and cranes.

Angier B. Steele, appointed assistant to director of industrial relations, LUKENS STEEL CO., Coatesville, Pa.

W. C. van Dyck, named assistant manager of education and training, CATERPILLAR TRACTOR CO., Peoria, Ill.



A. LEHR, elected vice-president, Bliss & Laughlin, Inc., Harvey, Ill.



RAYMOND G. RECH, elected director, vice-president in charge of production, and treasurer, Arens Controls, Inc., Evanston, Ill.



HENRY J. FISCHBECK, made staff metallurgist, advanced tool engineering group, Pratt & Whitney Aircraft, East Hartford, Conn.

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**STEEL PLANT EQUIPMENT**

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Phone ATLantic 1-1370

## Personnel

*Continued*

**Rexford C. Burnham**, appointed Hydraulic Division manager, **J. N. FAUVER CO., INC.**, Detroit.

**Robert H. Green**, appointed farm sales manager, **WILLYS-OVERLAND MOTORS, INC.**, Toledo.

**Charles D. Steele**, appointed superintendent of blast furnaces, **Monessen, Pa.**, plant, **PITTSBURGH STEEL CO.**

**J. J. Matich**, appointed industrial sales engineer, **THE PARKER APPLIANCE CO.**, Cleveland.

**Ernest W. Rothaar**, appointed to supervisor of the master mechanic's division, **BRIGGS MFG. CO.**, Detroit.

**Ralph W. Leighton**, named assistant to general sales manager, Pontiac Motor Div., **GENERAL MOTORS CORP.**, Pontiac, Mich. He succeeds **Walter I. Gibson**, who has retired.

**W. S. Truesdell**, appointed newly created position of assistant general manager, Buffalo Steel Div., **H. K. PORTER CO., INC.**, Tonawanda, New York.

**John Wallace**, promoted to sales manager, Midwest Div., **CORY CORP.**, Chicago.

**Emmett F. Cary**, named district sales manager, entire Metal Products Div., **KOPPERS CO., INC.**, Pittsburgh.

**Fred L. Ethen**, appointed district sales manager, Detroit office, **PITTSBURGH STEEL PRODUCTS CO.**

**Robert J. Fraser**, named eastern sales supervisor, Aircraft Div., **KAY-NAR CO.**, Los Angeles.

**Henry Sandrock**, named plant manager, Pressed Metal Div., **CHEVROLET MOTOR DIV.**, Flint, Mich.

**Harold A. Burnip**, appointed director of purchase engineering, **THE LINCOLN ELECTRIC CO.**, Cleveland.

**William F. Tierney**, appointed manager, Fastenings Dept., **EDGCOMB STEEL CORP.**, Hillside, New Jersey.

**Paul E. Nelson**, named general foreman, cold rolling and annealing departments, **KAISER STEEL CORP.**, Fontana, Calif.

**Joseph A. McGonagle**, appointed to sales force, Cincinnati district, **BULLDOG ELECTRIC PRODUCTS CO.**, Detroit.

**Matthew J. Betley**, appointed works manager, **AEROQUIP CORP.**, Jackson, Mich., and **George J. Fischer**, appointed general sales manager.



**FRED HENNIG, JR.**, named manager, Chicago-Midwestern district, **Kennametal, Inc.**, Latrobe, Pa.



**HERBERT V. EVANS, JR.**, appointed district manager, Wilmington, Del., **Alloy Steel Products Company, Inc.**, Linden, N. J.



**C. R. BOLL, JR.**, appointed to position of general sales manager, **Cummins Engine Co., Inc.**, Columbus, Ind.



**JASON SAUNDERSON**, appointed director of engineering, **Baird Associates, Inc.**, Cambridge, Mass.

## Personnel

*Continued*

Robert T. Jennings, appointed sales application engineer, Detroit district office, THE RELIANCE ELECTRIC & ENGINEERING CO.; William F. Kiser, Jr., appointed sales application engineer, Philadelphia district sales office; and John M. Duff, assigned to the Applied Engineering & Industrial Sales Dept.

Robert W. Daumiller, appointed assistant purchasing agent, TOWNSEND CO., New Brighton, Pa.

Richard S. Stockwell, appointed sales and service representative, Minneapolis-St. Paul territory, LEWIS-SHEPARD PRODUCTS; and Raymond F. Purinton, made sales and service representative, Denver territory.

Donald M. Covert, named office manager, THE ALLIED METALS CO., Niles, Ohio.

Stephen Sesnick, appointed industrial sales representative, New Jersey and lower New York area, LOWE BROS. CO., Dayton.

J. W. Mull, Jr., appointed sales representative, for Indiana, Western Ohio and Northern Kentucky, SINTERCAST CORP. OF AMERICA.

James B. Sheean, Jr., appointed public relations manager, THE H. K. FERGUSON CO., Cleveland.

Jack H. Smith, appointed district sales manager, East-central area, WOLVERINE TUBE DIV., Calumet & Hecla Consolidated Copper Co., Detroit.

Robert P. Thomsen, appointed assistant advertising manager, DOLLINGER CORP., Rochester, New York.

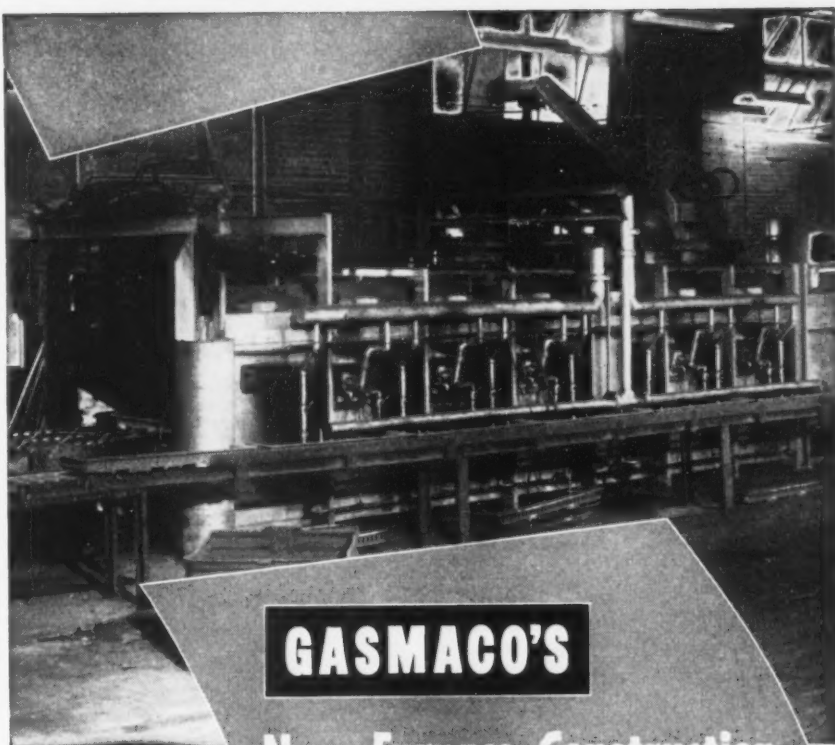
J. C. White, appointed supervisor of sales for the Virginia-Carolina area, CHASE BAG CO.

## OBITUARIES

Raymond G. Russell, 65, retired Pacific Coast vice-president, Cyclone Fence Dept., American Steel & Wire Div., U. S. Steel.

Charles T. Posey, 38, welding engineer, Arcos Corp., Philadelphia, recently in the Bryn Mawr Hospital.

Fred C. Burkhardt, vice-president and chief engineer, The Crosby Co., Buffalo, recently.



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# Automated Forging Line

## BOOSTS OUTPUT, CUTS COSTS



By W. G. Patton  
Asst. Technical Editor

A completely automated crankshaft forging line at Dodge Div., Detroit, has virtually eliminated manual handling in production of semi-finished crankshafts from SAE 1045 steel billets. First automotive installation of its kind, it may set the pattern for further forging mechanization in the industry. Results? Impressive! Dodge claims a 100 to 200 pct production boost. Uniformity and quality are better while scrap losses are down. Unit costs have dropped. Working conditions have improved. Big units in this unusual line are a Hagan rotary furnace which handles 300 billets per hr, and a 6000-ton Ajax forging press said to be the largest forging press automakers are using.

**A**mong the operating advantages of the new, continuous press forging line for crankshafts at Dodge Div., Detroit, are: (1) 100 to 200 pct increase in production, (2) improved uniformity and quality of product, (3) complete elimination of manual handling, (4) better working conditions, (5) reduced scrap losses, (6) substantially reduced unit costs in the manufacture of automotive forgings.

The new Dodge setup eliminates virtually all manual handling of billets or semi-finished crankshafts. The continuous press forging line is the first automotive installation in which "automation" has been used extensively and is expected to set the pattern for additional mech-

anization of forging operations throughout the automobile industry.

Integrated hydraulic, mechanical and electrical devices take steel billets from the Dodge storage yard and deliver them, heated to the proper temperature, to forming rolls, 2-die forging press, trim press, flange forging, straightening, heat treating, cleaning and center drilling stations. The complete cycle of operations, which requires 7 to 8 hr for an individual steel billet, is entirely mechanized.

Many of the ingenious electrical, hydraulic and mechanical devices used were designed and built by Dodge engineers and toolmakers. The operation is housed in a building 150 ft x 500 ft designed especially for this operation. A second

**"Removal of fatiguing physical effort was uppermost in the minds of engineers . . ."**

continuous press forging line is being built and provision has been made to add a third line.

The plant began operating on a limited scale about a year ago. Since that time, a number of modifications and revisions have been made. Other changes will be made as fast as they are proved in service.

Both 6-cylinder and V-8 crankshafts can be made on the new continuous line which is capable of producing up to 150 crankshafts per hr. Fig. 1 shows a schematic diagram of the plant layout. Dodge Div. forge shop produces crankshafts for Plymouth, Dodge and DeSoto Div. of Chrysler Corp. Steel used is SAE 1045.

In designing the new plant, the removal of fatiguing physical effort and the elimination of the human variable were uppermost in the minds of Dodge engineers. In addition to maintaining greater uniformity of product as compared with hammer forgings, size control can be held much closer in the new operation.

Steel billets stored outside the plant are lifted by a magnetic crane and placed on a rack outside the plant. A hydraulic cylinder pushes the billets through a warming furnace.

Billets are sheared into pieces ranging in

weight from 106 to 125 lb and moved by conveyer into a Hagan rotary furnace (Fig. 2) equipped with a hydraulically-operated jaw-type mechanism (Fig. 3) that picks up the billet and moves it into the furnace. Billets are lowered into place in a horizontal position. Forging temperature is 2250 to 2300°F.

The furnace-loading operation is reversed by a hydraulic device, similar to the loading mechanism, that lifts the heated billets and deposits them on a slide which delivers the heated steel to a conveyer. The hot billets next pass through a four-jet, high pressure water descaler operating at 1500 to 2000 psi.

Prior to the adoption of the new press line, Dodge used rolled-to-shape steel in producing crankshafts. In the new line, a No. 10 roll reducer distributes the material in the most advantageous position for press forging. (Fig. 4.) The moving billet comes to a complete stop before the reduction takes place.

As billets emerge, they interrupt a photo-electric light beam. This actuates an air-driven piston which turns the billet 180 degrees and brings it into position for the press forge operation. (Fig. 5.) A conveyer carries the billet to the forging press operator.

After pressing (Fig. 6) the steel in two dies, the operator pushes the forging on to a conveyer on the opposite side of the press. Another conveyer carries the forging to the trim press where flash is removed. The forging is pushed out of this press by an air cylinder. Flash is dropped

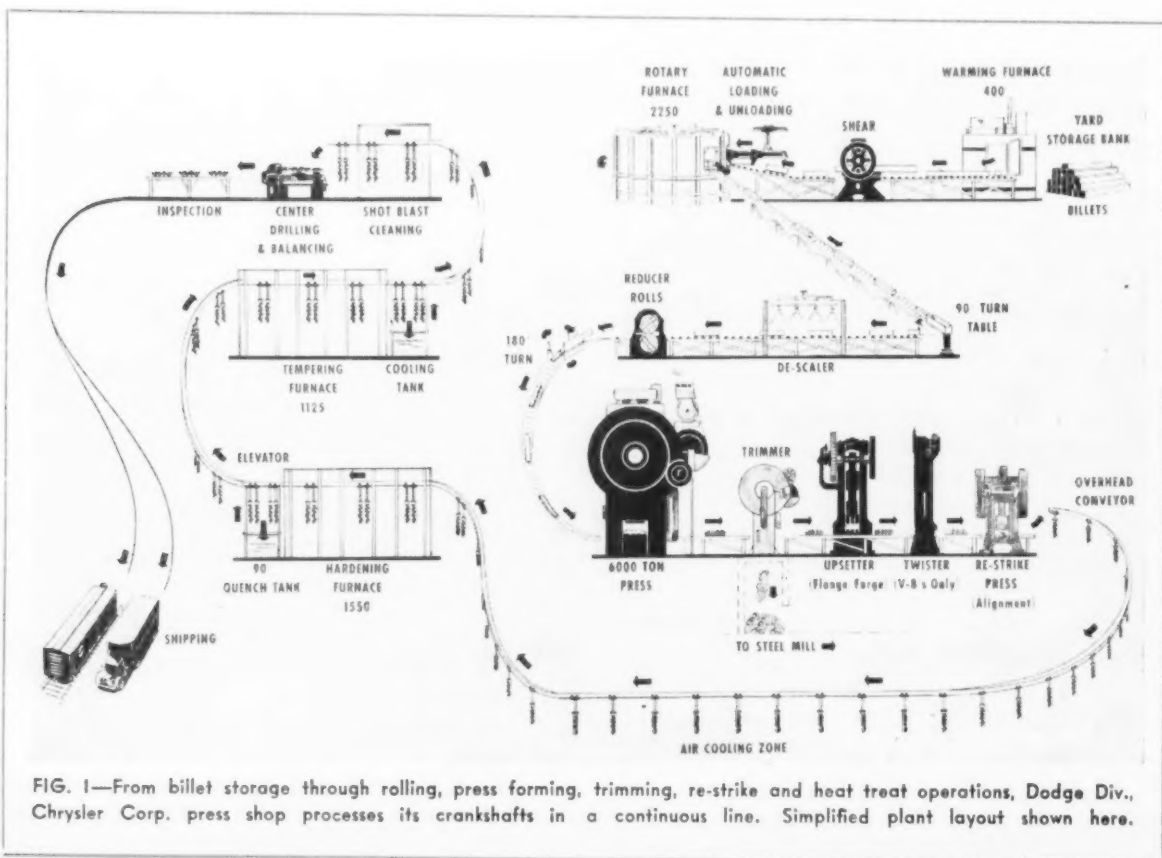


FIG. 1—From billet storage through rolling, press forming, trimming, re-strike and heat treat operations, Dodge Div., Chrysler Corp. press shop processes its crankshafts in a continuous line. Simplified plant layout shown here.

through an opening in the floor and is conveyed automatically outside the plant and into freight cars.

Tongs and an overhead trolley aid the operator who next places the trimmed forging in a 4-in. upsetter.

Crankshafts for V-8 engines are forged flat. These must be twisted to bring the crankpin bearings into proper alignment. (Fig. 7.) Six-cylinder crankshafts do not require twisting and provision has been made to remove this equipment from the line when such cranks are being made.

Following the twisting operation, an 8-cylinder crank goes to a restrike press. The forging is then placed on a rack which actuates the conveyer line that will carry the crankshafts in a vertical position through all subsequent operations. The conveyer starts and stops automatically as cranks are delivered by the operator.

### Major fixture changes are unnecessary

Holcroft gas-fired furnaces (Fig. 8) of new design are used both for hardening and drawing operations. Carriers operate from a mono-rail system. Each rack carries four forgings, suspended vertically. Weight of the rough forgings varies from 103 to 120 lb.

An air hoist elevator moves the carriers either to a storage bank or to a supply station where, in groups of two (8 crankshafts) they are ready to move into the furnace. Hooks which must be submerged in the quenching bath are made of Inconel but other parts of the fixture are made of milder alloy such as 35 Cr-15 Ni ore 2512. Hardening temperature is 1550°F. Cycling time is approximately 100 min. Carriers enter the furnace at intervals of about 3 min.

Design of the furnace and the use of water-cooled overhead rails permit running a variety of parts through the furnace without major changes in fixtures. Another advantage is easy

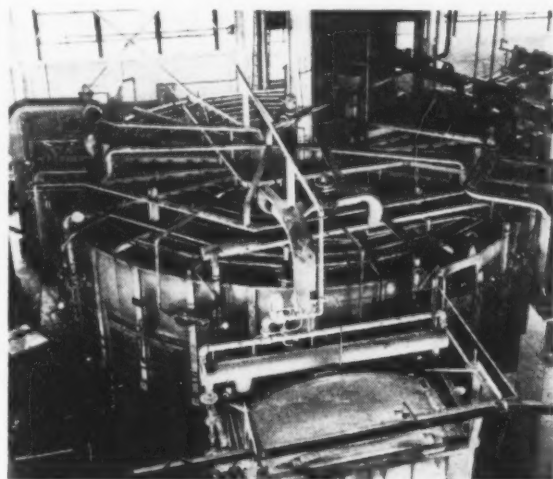


FIG. 2—A Hagan rotary furnace, equipped with mechanical loading and unloading devices, heats 300 billets per hr.



FIG. 3—Fully automatic steel "hands" load and unload billets without sliding them across the furnace floor.

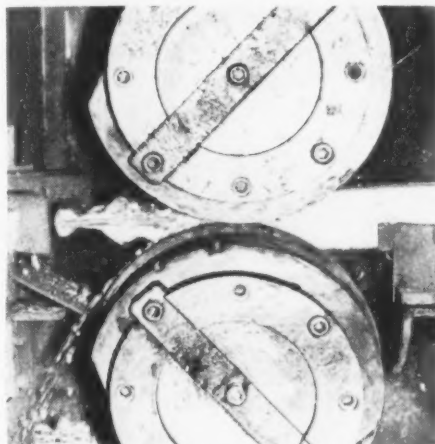


FIG. 4—Heated crankshaft billets are reduced automatically in the rolls shown here. The billet passing through the rolls is being shaped to facilitate press forging.



FIG. 5—Reduced crankshaft billet, pushed end-over-end, is delivered to the forge press by conveyor.

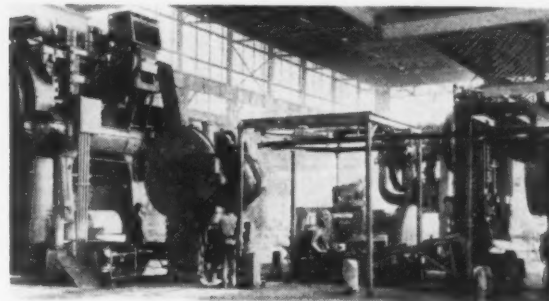


FIG. 6—A 6000-ton Ajax press, largest in the auto industry, is used for press forging. A 2-die setup is employed.

**"Results indicate a substantial increase in die life, perhaps as much as 100 pct . . ."**

repair of fixtures without shutting down the furnace.

A strongly agitated water quench for approximately 70 sec completes the hardening operation. Scale is removed by conveyor from the quenching bath. An elevator raises the carriers from the quench and back to the monorail where they move into the gas-fired Holcroft tempering furnace. Cycling time in the furnace is 120 min and the temperature is 1125°F. This furnace has a number of unusual features, including recirculating of heated air in the final zone.

After emerging from the tempering furnace, forgings are water-cooled and then carried by conveyor where they are cleaned by blasting with cast shot. Finally, the forgings are transferred manually with the aid of an air hoist to a conveyor which carries them to machines which center drill the crankshaft in such a way as to minimize the amount of stock that must be used in balancing the crankshafts dynamically. Subsequent machining operations are performed by another Chrysler Div.

Considerable experimental work has been done on press forging dies, including the use of heat-

resisting alloy compositions such as 5 pct Cr steels that would not be suitable for hammer forging. Results to date indicate that a substantial increase in die life, perhaps as much as 100 pct increase may result from the use of such die steels for press forging.

The 6000 ton Ajax forging press used at Dodge is the largest in the industry being used to produce crankshafts. Dodge also uses forging presses, rather than hammers, to produce ring gears, clutch parts, brake pedals, connecting rods and other highly stressed parts. Advantages of higher production, better quality control and improved working conditions are also realized in these operations.



FIG. 7—Crankshafts for V-8 engines are forged flat and then twisted to shape on this twisting machine.

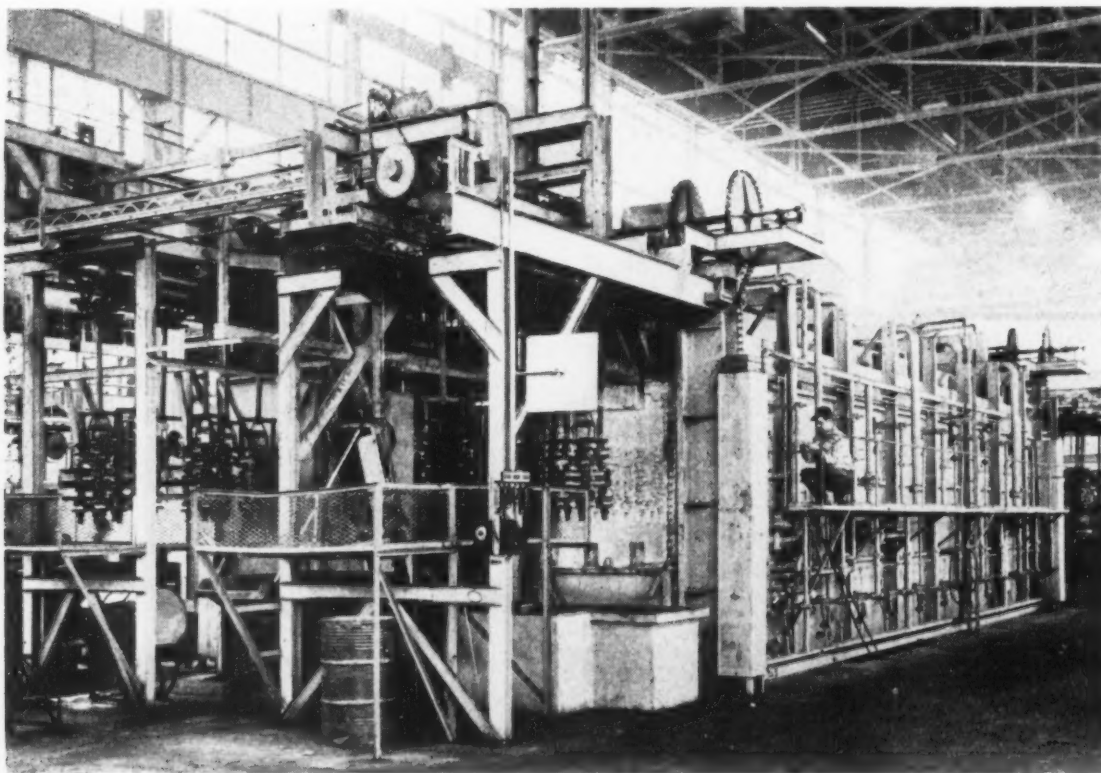


FIG. 8—Twin Holcroft hardening and tempering furnaces are used. Parts are heat treated in a vertical position.

# CARBIDE TOOLS CHALLENGE

## efficiency of automatic screw machines



By C. R. Morgan

Consulting Engineer  
Cone Automatic Machine Co., Inc.  
Windsor, Vt.

Complete carbide tooling has increased output six times and tool life ten times, over the average obtained with high speed steels. Results were obtained under extensive production runs on varied types of material, and machines designed to obtain the greatest production possible with high speed steel tools. As carbide tooling improves, greater consideration must be given motor power, tool setting facilities, stock loading and chip disposal. Tool design, machine rigidity, lubrication, coolants and inspection must also be considered in order to maintain a balance of efficiency between tools and machine.

**T**he purpose of a machine tool is to hold and move a cutting tool. The cutting tool does the desired work. Therefore the machine must enable best use to be made of the tool. Carbide tools challenge the automatic screw machine, providing opportunities far exceeding those provided by any other single development in the history of automatics.

The problems of tooling automatics do not compare with those of any other type of machine tool. On other equipment tools are usually individual and isolated in their functions. Tools

on automatics operate as units; tools of varied types working in a team. All must function at compromise feeds and speeds adjusted to their best collective capabilities.

How much can be accomplished with machines especially designed to get greatest possible capability from carbides is not yet known. Under extensive production runs on varied types of material, on machines designed where high speed steel tools predominated, complete carbide tooling has increased output 6 times and tool life 10 times over the average obtained with high

**"Downtime on automatics becomes more costly as productive efficiency increases . . ."**

speed steel tools.

As tooling, involving carbides, is improved, several factors must be considered to maintain a balance of efficiency between tools and machine. These include: Motor power; tool setting facilities; stock loading and chip disposal; tool design; machine rigidity; lubrication; coolants, and inspection.

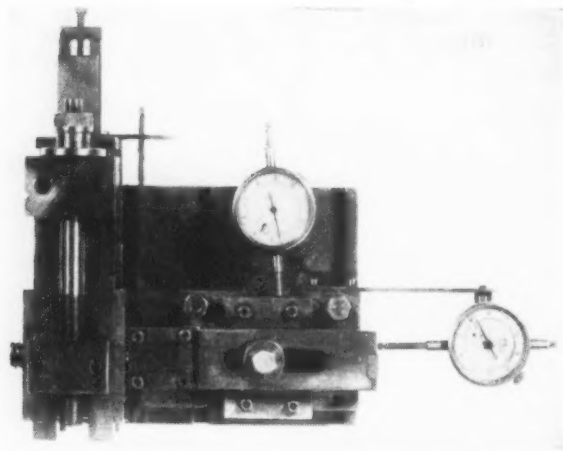
If a six or eight spindle automatic screw machine is run at six times conventional speeds, about  $\frac{1}{3}$  of available horsepower is required just for no-load operation. Therefore if 10 to 15 tools are in operation simultaneously at these greater speeds and feeds, it is obvious that a great increase in motor power will be necessary. It has been found that 50 pct extra power is advisable.

Adequate power must be available because constant speeds must be maintained under peak loads. A variation in speeds or feeds under load can deteriorate carbides and cause breakdown of tools more rapidly than almost any other condition.

An effort is being made to catalog individual tool consumption of power in multiple setups so that an accurate record will be available, so each type of tool under any given conditions can be charted and its power usage determined.

With ammeters, an accurate check can be maintained on condition and efficiency of tools in use to note when tools pass the stage where replacements or grinding is required.

Downtime on automatics becomes proportionately more costly as productive time efficiency increases. With performance increased six times, equipment has six times the former value and any loss due to out-dated methods is thus greatly increased.



CALIBRATED tool slide for fast accurate tool setting in each cross slide position. Tool setting can be improved to almost the same degree of efficiency as carbide tooling itself.

Tool setting up is among the conditions which can be improved to almost the same degree of efficiency as carbide tooling itself.

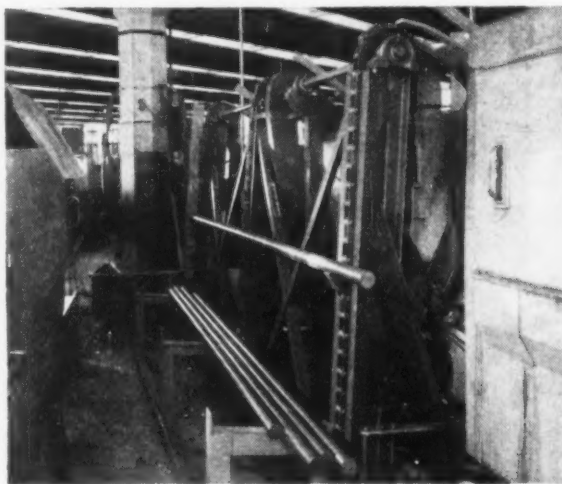
Efficient tool setting can be accomplished with calibrated dials and adjustments, located in each tool position or area. With these, tools can be set to a very close degree of accuracy.

Thus two important factors can be accomplished: Accuracy in positioning the tools; and, equally important, speed in adjusting and setting of tools.

This can decrease downtime for tool setting by over 50 pct. It may be accomplished without the interference of coolants and be performed without the machine spindles in motion, allowing the operator to work under more normal conditions and eliminating material waste and spoilage.

Stock handling and chip removal are another of the very important operating factors which will need improvement to match carbide tool efficiency.

Faster material removal requires faster and



STOCK ELEVATOR for automatic screw machine. Stock handling is one of the very important factors which will need improvement to match the growing efficiency of carbide tools now available for high speed automatics.

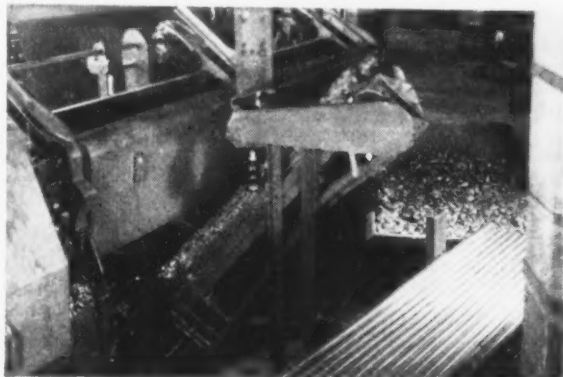
better material and chip handling. On one machine, 1700 lb of bar stock was loaded into the stock reel every 8 hr when high speed steel tools were used. With complete carbide tooling on the same job, 10 loadings totaling 17,000 lb were required in the same period.

This called for a remedy, and complete automatic stock loading equipment was installed. Automatic loading was accomplished in  $\frac{1}{4}$  the time formerly required by hand loading. From a dolly loaded once a day in central stock rooms and spotted at the machine, the stock elevators delivered the bars directly into the magazine. Where an operator had been handling 1800 lb of material to produce a gross of 320 pieces, he now handles no material and produces 1920 pieces. Chip removal equipment was installed with equally beneficial results.

As operator's service time is decreased and his

efforts on the more laborious jobs eliminated in operation of a machine, and as automatics are recognized as machines to be operated in groups, it is evident that the size of machine groups per operator can be increased. By actual time studies, these recommendations are shown to be both feasible and practical.

As a tool material carbide is more exacting than high speed steel. It does not offer the leeway between the best results and those that will get by. Carbide demands a closer adherence to free cutting. Carbides have been termed fussy by those who have been too insistent on them performing under adverse circumstances. It can



CHIP CONVEYER shown here permits faster and better chip handling which is required by faster removal of material.

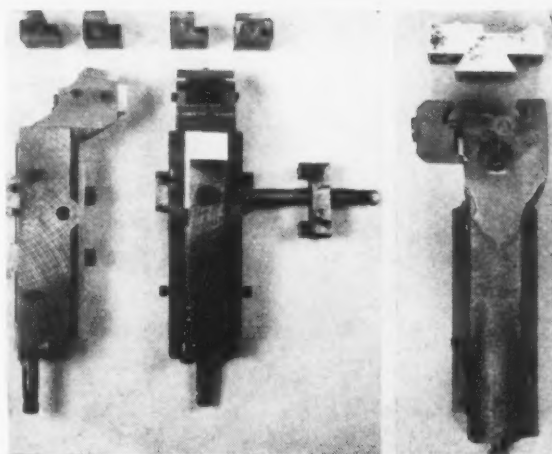
be said that carbide will do more for the automatic that does more for the carbide. In the sense that a machine must be in A-1 condition carbides are choosy not fussy. Their use pays off in greater production per piece, per tool, per machine, and per dollar invested.

Tool engineers know the basic principles of good tooling to meet the requirements of carbides. Nothing but application of these principles made drilling and threading with carbides practical on automatics. When the obstacles involving these two operations were overcome, almost complete carbide tooling on these machines was made possible.

But conventional designs of dovetail form tools and holders have not been found to perform satisfactorily. The exacting requirements of carbide have made it necessary to redesign tool holders and tools for greater rigidity and support. In redesigning these holders and tools, simpler and cheaper methods have been followed and proven more effective.

The concentration of multiple spindles in a given area, coupled with greater speeds, makes necessary substantial support and close fitting of moving parts, including spindles, bearings and slides. Faster production, and greater stock removal in shorter cycle time with carbide usage multiplies the load and strain on the entire machine.

If progress continues to improve the alignment and balance of spindles and shafts, lubrication of



GREATER RIGIDITY, tool life and reduction in total cost are allowed with new type forming tools and holders, shown left. Dovetail tools are eliminated. Old type is shown at right.

bearings and moving parts increase in importance.

The lubricating problem is acute, as machines have upward of 40 grease fittings requiring careful attention. A one-shot lubrication system will save 20 to 25 min per day over the present system. Where grease guns are used it is apparent that important grease fittings can be neglected and serious injury to equipment could result. This often results in expensive maintenance work and machine down time. The one-shot lubrication system entirely eliminates the human error.

Water solubles appear to be the most efficient, economical and desirable for use with carbide tooling. Sufficient lubricants are contained in good solubles so that no injuries, excessive wear or corrosion affects the equipment. Seals and traps are provided on most equipment to prevent an undue amount of mixture of the solubles and lubricants.

#### Solubles keep temperature even

Solubles will keep the work and tools at a normal and even temperature. This prevents distortion by heat of parts being machined. Closer tolerances and better finishes are maintained. This may eliminate, in some cases, secondary operations like reaming or grinding.

Improved inspection facilities at the machine have been found desirable to allow more rigid and frequent inspection of accumulating parts. Unless quick and accurate methods of checking work are provided, the faster accumulation of pieces cannot be inspected in satisfactory percentage.

It should be remembered that some responsibility rests with the machine tool users. It should be their function to inaugurate a training program for the personnel responsible for carbide applications. Subjects should include equipment capacity, proper feeds and speeds, material machinability, proper tool design, and machine operation. Included in this group should be servicemen, supervisory planners, wage-rate, time study and tool design personnel.

Accuracy plus—

# Supercharger rotors MACHINED WITH GOOD SETUPS



By G. E. Campbell

Works Manager  
Pesco Products Division, Borg-Warner Corp.,  
Bedford, Ohio

**R**otors for superchargers are among the diversified products made by the Pesco Products Division of the Borg-Warner Corp. at its modern plant in Bedford, Ohio. The rotors are cast from an aluminum alloy in permanent molds around the centrally located steel shafts. Casting is done by an outside supplier, but Pesco machines the rotors to insure close running fits between them, and between the housings into which the rotors are subsequently assembled.

In the initial operation in a Gisholt machine, two shoulders on the shaft and the ends of the casting are rough-faced with the work piece turning at 950 rpm. Carbide tools of type 78B remove 3/32 in. of steel (hardened to 33 Rc) from the shaft shoulders, and type 883 carbide bits remove 1/4 in. of aluminum from each end of the casting. In each case, 0.015 in. of metal is left for subsequent finishing cuts. The rotors then go to a Cincinnati grinder which finishes the bearing diameters at both ends of the shaft.

The next step is done in a Milwaukee Simplex milling machine. The shaft is air clamped between centers and a fluted cutter of HSS turning at 183 rpm is used to rough-mill about a 180° arc on each of two lobes of the casting, as well as the rounded recess between these lobes, as shown in Fig. 1. After the first cut, the casting is indexed 120° for the second cut, and again for the third cut. In this operation, the feed is 10 1/2 in. a minute removing about 0.100 in. of metal. A soluble oil coolant is run in a stream during these cuts. Eight to nine pieces an hour are thus milled and about 0.015 in. of metal is left for finishing cuts.

The setup for finishing is a duplicate of the previous setup except for the use of an inserted blade fly cutter having a type 883 carbide tip on

Supercharger rotors must be properly machined to develop the pressure for which they are designed. In these setups, twelve machines rough and finish the rotors to close running fits. In some operations, the hardened steel shaft and the three aluminum alloy lobes cast around the shaft are machined simultaneously using two types of carbide bits.

each blade. This cutter, shown in Fig. 2, turns at 1000 rpm as the work is fed under the cutter at the rate of 6.9 in. a min. A 30-microinch finish results.

Work pieces are then returned to a Gisholt machine which finish faces the shaft step and casting ends, and finish turns the diameters at each end. It cuts both aluminum and steel, removing about 0.030 in. of metal on the diameters. Facing cuts remove 0.015 in. from each end of the lobes bringing them between the limits of 11.119 and 11.917 in. One step length is held to 0.611-0.612 in. and another to 0.600-0.605 in. For this operation, the work turns at 950 rpm.

A Lodge & Shipley lathe is used next on the rotors to undercut each end and to cut snap ring grooves. A keyway is then cut in each shaft on a Brown & Sharpe milling machine, holding the depth to within 0.001 in. and the width between 0.3115 and 0.3125 in.

A hand milling machine is used next to cut a longitudinal groove 0.033-0.035 in. wide along the crest of each lobe. The same cutter mills a 5/16-in. flat at each side of the groove but only to half the depth. The cutter diameter inner edges are spaced 0.125 to 0.130 in. apart so that a lip or longitudinal wall about 0.045 in. thick remains at each side of the groove. Subsequently, a strip of fibre, thinner at one edge than at the other, is set on edge in each groove with the thicker edge at the bottom. A pair of rolls in another hand miller bends the lips together and locks the fibre in the groove between them. The fibre is of such width that about 1/32 in. projects above the metal.

Serrations at each end of each lobe of the casting improve the sealing characteristics at these ends when assembled in the case. Cutters used

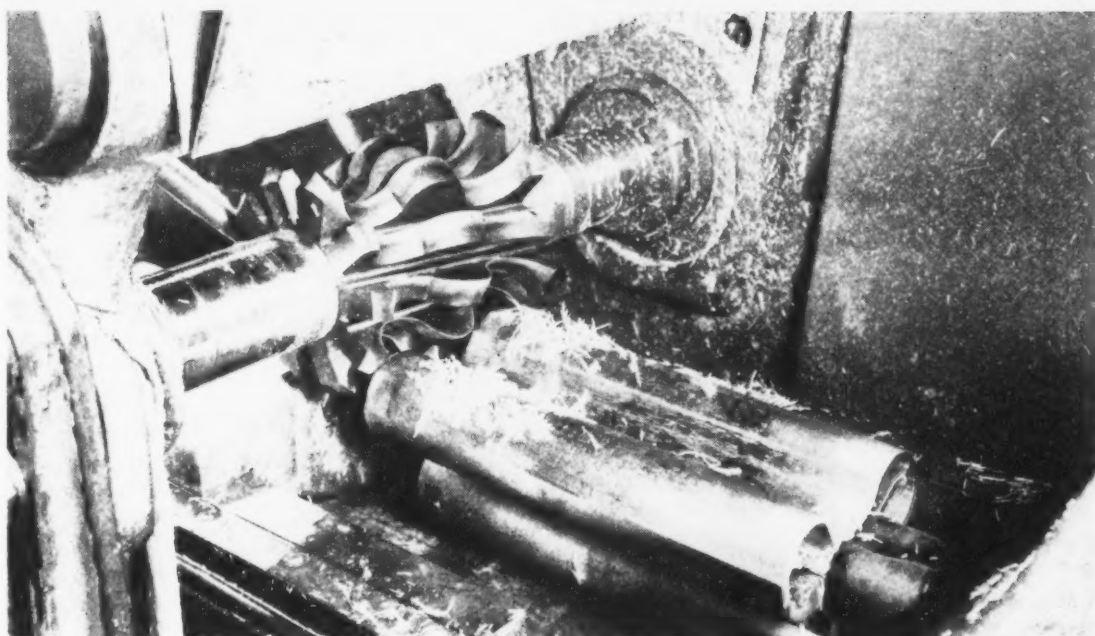


FIG. 1—Rough milling of cast aluminum rotor lobes is done with a formed fluted cutter. The work is held in an air clamping fixture and fed from the underside. Cutter, of high speed steel, turns at 183 rpm to rough mill arc.

for these serrations have 16 teeth which are  $1/32$  in. wide, thus providing 32 serrations per in. This work is done in a Milwaukee miller with the work piece held in a V block. It is fed into the cutter at from 0.015 to 0.017 in., an indicator being used to measure this feed. One cut is made on each lobe with  $120^\circ$  indexing between cuts. The work piece is then changed end for end and the three cuts are repeated.

The rotors then go to a Cincinnati grinder where each is set on centers and the edges of the three fibre strips are ground to print diameter. When assembled in the case, the fibres make a fairly close fit in the bore in which the rotor

turns. They act as seals between mating lobes of the meshing rotors. Thus, the fibres act as packing strips and prevent leaks which, if permitted, would prevent the supercharger from developing the pressure for which it is designed.

In the final operations on the rotor, sharp edges are hand burred and dynamic balancing is done, some metal being removed if required, to effect the balancing specified.

Inspection includes the use of a gage that fits over the end of the shaft. One recess is centered over one lobe and, when so located, the other lobes must fit within 0.0005 in. to avoid rejections. Other close limits must be held.



FIG. 2—Final milling of lobes is done in a setup similar to that in Fig. 1 but the cutter has inserted carbide tipped blades and turns at higher speed. Cutter turns at 1000 rpm, work fed at 6.9 ipm. Finish is 30 microinches.

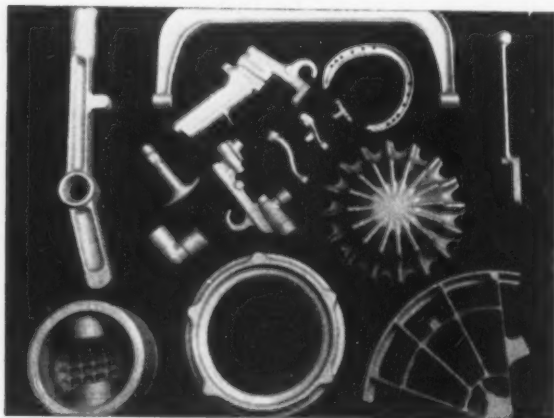
## Dip and Etch Simplify Aluminum



By Alfred H. Pope  
Technical Service Engineer  
Pennsylvania Salt Mfg. Co.  
Philadelphia

A special alkaline etch and nitric acid treatment used at Alcoa's Cleveland plant has proved a big help in quality control. The treatment helps inspectors spot unsound forgings. Lubricant smut is evenly removed from the forging surface to leave a bright finish. But discoloration remains in cracks and discontinuities caused by metal overlapping during forging. Inspectors readily pick out the substandard forgings.

Inspection is not merely a final step in the routine at Aluminum Co. of America; it is carried out at almost every stage throughout the manufacturing process. At Alcoa's plant in Cleveland, every forging produced is examined, prior to shipment, for surface imperfections. This calls for a method that is simple and quick—in order to keep pace with production—yet sufficiently versatile to apply to the many sizes and shapes of parts made.



TYPICAL ALUMINUM forgings made at Alcoa's Cleveland plant. Surface inspection of these parts is made easier through use of non-scaling etchant.

The method found best suited to meet these requirements consists basically of immersing forgings in a solution of an alkaline etchant, Pennsalt AE-18, followed by a nitric acid dip. This treatment not only removes lubricant smut and discoloration from the forging, and leaves it bright and clean, but also reveals any surface discontinuities which may be present.

Typical etching line at the Cleveland plant includes three cylindrical tanks, each 6 ft in diam and 15 ft deep, and holding about 2500 gal of solution. The first tank contains nitric acid, the second, rinse water, and the third, the etching



ETCHING FORGED PARTS at Alcoa's Cleveland plant prior to final forging inspection. This is typical of three lines installed at the plant to process forgings for inspection.

# Forging Inspection

solution. Etching lines in the plant are located near the forging room and adjacent to the inspection table.

It is advantageous to employ a short nitric acid dip ahead of the etchant to remove scale formed on the parts during forging. In this manner the surface is activated and etching time reduced. Acid is used at room temperature, at a concentration of 10 to 12 pct. Treatment time is about 15 sec—just enough to soften the scale.

A quick dip in the water tank rinses the forgings and minimizes carryover of acid into the alkaline etchant. This reduces contamination and excessive consumption of etchant.

Forgings are then immersed in the alkaline etchant, for the actual etching operation. On entering the solution the forgings may be covered with a black shop smut which has been softened by the acid pre-treatment. An immersion period of 5 to 15 min completely removes surface soil and sufficient metallic aluminum to permit the detection of surface discontinuities.

The etchant is used at 6 to 8 oz per gal at 140°F. After this operation forgings are returned to the water tank for rinsing and to the nitric acid for a fraction of a minute to remove any smut remaining on the forgings after etching. The forgings air dry after a final rinse. On drying, the parts are clean and possess a typical bright metallic aluminum appearance.

Visible to the eye, however, may be fine black lines and darkened areas, which reveal any flaws present. Surface discontinuities caused by overlapping of metal during the forging operation, by cracks, by inclusion of foreign material or by

other surface defects are readily apparent. This identification is possible because the etching cycle removes the black smut from the surface of the forging, but cannot penetrate the cracks and flaws to remove any black material contained therein.

Depth of the flaw is determined by polishing the forging with a small hand grinder until the black marking disappears. If any uncertainty exists, the part is re-etched and inspected again.

An experienced inspector knows how deep a flaw may penetrate before being cause for rejection. Most forgings are subject to machining operations whereby 3/16 inches or more of the surface metal is removed. For the part to be acceptable, therefore, the flaw must be sufficiently shallow in depth so as to be completely removed by the final machining.

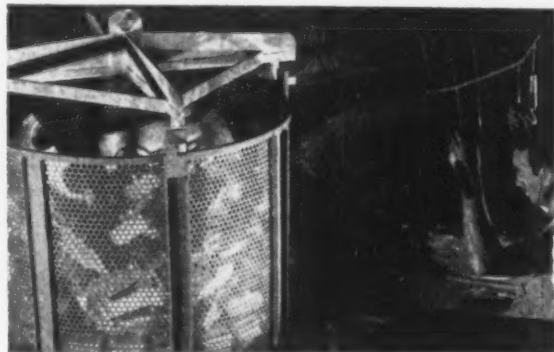
The bath is used continuously, and is replenished with fresh solution from time to time. After several weeks usage, the exhausted solution is drained off. The etchant is non-scaling and prevents formation of hard, rock-like scale in the tanks.

Of all commercial aluminum alloys treated, only the 18-S alloy requires special attention. The high nickel content increases the resistance of aluminum to the etchant, and longer immersion periods are required.

Alloys such as 32-S, which contain relatively large amounts of silicon, etch readily but are left with a comparatively dull gray surface rather than the usual bright metallic finish.

To facilitate handling, small to medium sized forgings are placed in round baskets that can be conveniently immersed in the tanks by use of an overhead crane. Larger forgings are stacked together and immersed in the tanks without the use of special baskets.

After the parts have been subjected to final inspection they may go to the heat treating line where they may be processed according to required specifications. If the inspection is intra-process, the forgings are returned to the forge shop for further processing.



ETCHING LARGE, complex aluminum forgings, prior to surface inspection. Process removes metallic and non-metallic surface films from the forgings and permits inspection of the parts for discontinuities.



VISUAL PROCESS inspection of aluminum forgings simplifies detection of surface discontinuities, cracks, and other surface defects. Experienced inspectors know how deep flaw may penetrate before being cause for rejection.

## PEI Forum Features ENAMELED ALUMINUM, CONTROL PRACTICES



By K. W. Bennett  
Chicago Editor

Porcelain enameled aluminum and shop control practices held the stage at the recent meeting of the Porcelain Enamel Institute. More than 300 members, gathered in Champaign, Ill., were fact bombarded in a sizzling first day of "5-min papers." Luminescent porcelain enamels, one-coat whites on steel, and low temperature enamels evoked wide interest. Control practice studies in large and small shops gave Institute members guides for operations in their own plants during the coming year.

### Eye Openers—Quickie Papers Set Fast Pace

A direct, practical approach to the working problems of the porcelain enameling shop made the "Shop Practice Forum" of the Porcelain Enamel Institute a meeting that should have a considerable affect on enameling trends over the next year.

Over 300 Institute members attending the recent Champaign, Ill., meeting, heard discussions on "Fluorescent Enamels," "Low Temperature Enamels," "One Coat Whites Directly on Steel" and "Enameling of Aluminum."

Setting the fast moving pace for the meet were a series of 5-min papers read the opening day, Sept. 10. Another 5 min were allowed for dis-

cussion and questions from the audience. An electric alarm clock with the insistence of an air raid warning keyed speaker and audience to a tight time schedule. The "5-min paper" bombarded the listener with facts he could take home and put to work.

Considerable interest was aroused in "Luminescent Porcelain Enamels," by D. C. Bowman, Chicago Vitreous Enamel Products Co. Luminescence is obtained by black light excitation of phosphors in the enamel coating. Mr. Bowman reported using 360-BL fluorescent tubes of from 4 to 40w mounted in standard fluorescent fixtures. Preparation of luminescent

porcelain enamel requires special milling techniques to achieve best results, the compound then being applied by spraying at 30 to 40g per sq ft over fired zircon or clear glass enamels. The base coat may be colored or white, and firing temperatures may range from 1400° to 1520° F for from 2.5 to 3 min. Standard enameling furnaces with an oxidizing atmosphere may be used. Lower fire luminescent enamels have the greatest brilliance, but are deemed advisable for indoor use only.

Protection of the luminescent enamels is a problem, particularly since contamination, tears, handling marks, or scratches appear as non-fluorescing areas in the finished coating. Protection of the luminescent enamel surface by a light glaze coat of a clear lead-free acid resisting glass was recommended. Such a coat will enable the luminescent surface to withstand 3 yr of outdoor exposure, according to weatherometer tests, and make luminescent enamels a superior item for outdoor luminescent uses, Mr. Bowman said. Suggested uses were signs, directional markers, military blackout markers, interior murals, exterior building trim.

### Interest in dry acid salts grows

Evidence of interest in use of acid dry salts was reported by J. B. Willis Pemco Corp. Results were contained in a questionnaire on pickling compounds mailed to a number of enameling plants. Other than the conventional sulfuric and hydrochloric acids used in pickling steel preparatory to enameling, acid salts were in use by seven plants. The dry acid salt was used (1) to reduce corrosion of overhead equipment, (2) reduce hazard to personnel, (3) eliminate the effect of conventional acid fumes on enameled ware, such as scumming and pitting, and (4) to minimize over pickling. Finished quality is reported to be at least equal to conventional acid pickle.

Several plants reported the dry salts were more easily handled than liquid acids, and that the solution life is three to four times that of sulfuric acid, according to at least one plant. Similarly, build up of iron content, it was claimed, is not as rapid as with sulfuric acid. On the other hand,—one plant reported the material attacked a lead tank lining, resulting in the formation of a lead salt scale, which caused pitting in enamels. A second plant reported less etch on certain steels, and advised a rinse after pickling to eliminate formation of a sticky substance on the ware. While initial

charging costs are higher than sulfuric acid, operational costs are said to be lower.

One plant reported using nitric acid, in connection with a special over coat direct on steel application. Nitric acid was desirable because of its rapid etching action. The nitric acid solution saturates rapidly with iron oxide, which can cause a pinholing in enamels applied directly to steel, but this would not be critical if conventional groundcoats were used. A stainless steel tank is used, the solution being carried at a strength approximately 10 pct and a temperature of not over 90°F. Pickling time is one minute. Life of the solution is determined by the iron content, and the particular application required 225 lb of commercial nitric acid for each 2000 sq ft (one side only) of steel pickled. Cost exceeds that of sulfuric and hydrochloric acids.

### Electrostatic spraying assessed

One plant had been using sulfamic acid, discontinued when the material attacked the monel tank in which it was being used. It had been chosen originally for use because, like the dry acid salts, it was easy to handle and produced no obnoxious fumes. Salts of sulfamic acid are soluble and can be readily rinsed away. Finished results were about equal to those obtained in using cold hydrochloric. Initial cost of charging the tank with sulfamic acid was slightly less than the cost of hydrochloric.

Electrostatic spraying is presently only adaptable to 30 pct of the problems in the paint field. M. J. Bozsai, of the Ferro Corp., declared in a discussion of spraying equipment. Though a great deal of work has been done here, there hasn't been a great deal of success thus far. In his experience, it had been successful only in coating small items. Speaking of pressure tank liners, he suggested enamellers study recently developed thin coat enamels that may serve more successfully than old heavy coat enamels applied in the past. Because of danger of chippage in the older enamel coats, some companies had gone to a stainless steel tank liner.

A more satisfactory material regulator to handle glazes and vitreous material, and control delivery to the gun, was suggested. At present, the best solution is the pressure tank, sometimes used to force material to a battery of runs through a deadend manifold. This does not allow maximum gun efficiency. A test installation is now in the field which may solve the problem.

## Enamel On Aluminum—Close Control A Must

Enamel-on-aluminum practice held the stage during the institute's second day. But offstage between session huddles indicated points of disagreement. Of particular interest was a paper on "Recommended Practices" by B. C. Bricker of E. I. du Pont de Nemours & Co., Inc. So far

five aluminum alloys have proven satisfactory for enameling purposes, with three others showing promise. Commercially pure aluminum 2S and 3S have been used where base strength is not a factor. Strong, heat-treatable alloys 53S and 61S, as well as casting alloy 43, proved

**"Enameled aluminum may be cut,  
... punched ... will withstand  
limited forming ..."**

readily adaptable for enameling purposes when treated in an alkaline chromate bath after cleaning.

But a clean metal surface is absolutely imperative, Mr. Bricker cautioned. Grease, labeling ink, and cutting wax must be removed. Use of anodized stock was similarly prohibited.

The enamel is a ball milled water suspension and is prepared much as are steel enamels. But finer grinding is recommended and clay is not preferred as a suspension agent. Fine grinding results in improved glass, but low temperatures make it difficult to fuse clay into glass and other suspension agents have proven more practical.

Mr. Bricker's studies indicated that over-drying at too high a temperature could prove more detrimental to the finished surface than under-drying. Ware should come from the driers warm, not hot. Best results are obtained by firing as soon as the surface moisture disappears. Firing is done in conventional furnaces having good thermal and atmospheric control, at 4 min at top temperature in a normal cycle. Electric furnaces and direct fire propane units were used. Other fuels proved satisfactory in full muffle type ovens.

When satisfactorily enameled, aluminum may be cut, sheared, sawed, drilled, or punched, and will withstand limited forming without damage

to the coating. The enamels used proved impervious to salt water and extremely resistant to thermal shock with a number of variations in color and surface variations possible.

Recommended enamel thicknesses varied from 1 to 6 mils, with the heavier enamel coatings having greater resistance to scratching, gouging, abrasions, and mechanical damage. Light applications had better resistance to thermal shock. Average coatings, ranging from 3.5 to 5 mils, proved to have the best general range of these characteristics. Enamels may be applied to aluminum by dip, slush, or spray. Suitable oil vehicles are available for squeegee or screen application.

**Care needed to control warpage**

Warpage is no more severe with aluminum than with other metals, and enameled aluminum has the advantage that it may be straightened by rolling or stamping at room temperature without damaging the fired enamel surface. Metal warpage could be attributed to: (1) variation in coefficient of expansion between metal and coat; (2) deformation of the metal by approaching its softening point during enamel firing.

Coefficient of expansion warpage could be alleviated somewhat by enameling both sides of the metal stock. A single ground coat or a coating of reclaimed enamel is frequently used where back spray is required. High temperature warping should be controllable through careful firing temperature control, which is normally below the critical point of the metal, and by providing adequate support for the work during firing.

Micro spall—minute and usually isolated



SHOP CONTROL PRACTICES and new industry developments held the attention of more than 300 members of the Porcelain Enamel Institute in a 3-day Shop Practice Forum held in Champaign, Ill.

spalling—generally occurs on sharp edges or as the result of porosity in the base metal. Porosity is encountered most often in the casting of alloys. The need for suitable design for enameling and selection of base metal having a minimum porosity is indicated.

Immediate spall—release of enamel from the base metal in general areas—usually occurs during the ground coat cooling cycle. Or, accentuated by moisture, it will occur while the cover enamel is being sprayed over the fired ground coat surface. Underfiring of the ground coat, over-chromating, insuitable metal composition, improper alloy, or foreign inclusions in the metal stock are possible causes.

Water spall—failure due to weather exposure, with corrosion at the metal-enamel interface—may occur between 1 and 24 months after exposure starts. Causes include incompatible enamel, improper alloy, incorrect metal pretreatment, excessive surface oxide, and improper cleaning of the metal surfaces.

## Shop Practice—Guide For Future Operations

The third and closing day of the shop practice forum was devoted to control practices in several types of porcelain enameling concerns—a large appliance company, a small sign and job enameling plant, plumbingware plants, and in the hollowware industry. Robert J. Baker, Frigidaire Div. of General Motors Corp., spoke for the appliance manufacturer.

Tests varied considerably, but a general sample would include, for steel: drop test, draw test and torsion test, with sag test and chemical or micro analysis being made only when trouble developed. The same is true for hardness checks, fishscale, reboil, and other tests. For drawing compounds: very limited. Cleaning and pickling: (includes both spray and immersion) concentration is tested by titration and pH of the nickel is tested with a pH meter. In some cases a pH meter was installed on the machine to aid in controlling acid rinse and nickel solutions. Solutions may be checked as often as once each 3 hr. Spray type equipment requires more frequent checking.

### Methods of checking milling

In milling control, more information is needed on high-density balls. There is considerable variation here in frequency of checking mill linings and balls. Ball charge, when an additional amount is being used to replenish a mill, is usually determined by measuring the distance from the mill loading door to the balls when the door is in an upright position. Water is added by metering. Fired samples on each mill of enamel are made by approximately 50 pct of the plants surveyed. Samples are checked visually

For effective control against tearing, an anti-tearing agent, doubling as a suspension agent, should be added to the mill charge. Potential outlets for enameled aluminum include wall and ceiling panels, structural siding, roofing, architectural tile, signs and labels, dials and instrument panels, instrument cases, furniture, pipes and fittings, appliance parts, and electrical shielding.

E. C. Woodland, Bureau of Ships, Navy Department, discussed the role of enameled aluminum in ship bulkheads, a use that is apparently gaining in importance in military thinking. It was pointed out, however, that before further use of either porcelain enameled aluminum or steel may be authorized, there must be further exploration of the flame barrier and ballistics properties of aluminum bulkheads.

Tests have already been authorized and preliminary findings indicate aluminum will have some value in the maritime field, but in this respect the metal is still in its infancy it was suggested.

for defects and surface texture, acid resistance where required, and for adherence.

Enamel consistency is checked by pickup tests, flow tests, and slump test. Specific gravity and water content are closely controlled, with considerable variation in checking time. Water content is checked by difference in wet and dry weight of a dip plate. Thickness gages are used in controlling enamel thickness.

### Instruments aid control

Typical instruments used in product control are a GE thickness gage, acid resistance test, with the PEI standard test used most commonly; color tests by standard panels or the Hunter reflectometer; scratch test; and thermal shock tests. The latter two are used only where specific requirements are necessary.

Speaking for the small job enameling plant was Walter W. Mickey of Barrows Porcelain Enamel Co. As in larger shops, the jobber depends to a certain extent on his shear hands to inspect incoming steel for scaling, punctures, or scratches. The sheetmetal foreman is charged with general responsibility in this respect. Pickling and cleaning follow standard testing procedures, with solutions titrated daily.

The cleaner tank is dumped about twice a year, acid tank dumped approximately once every 4 yr or when iron content reaches 5 pct. The neutralizing tank is dumped weekly. Nickel and acid are filtered daily. When dumping the mills, a sample is fired as a check against the standard sample chart. Impact testing is used to check ground coat adherence. Other mill tests include fineness, flow and specific gravity checks.

*Self propelled fixtures—*

# TRANSFER MACHINES HANDLE

## 4-Ton Armor Plate Weldment



By J. S. Kis, Jr. R. M. Olsen  
Chief Tool Engr., Tank Div. Planning Supt., Tank Div.  
Massey-Harris Co., Racine, Wis.

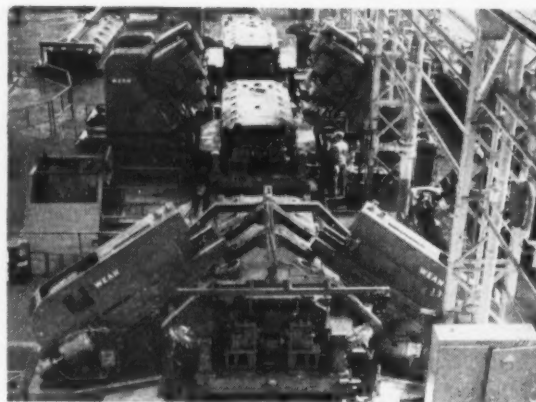
To handle a 4-ton gun carrier hull at Massey-Harris Co., a specially designed transfer machine was built. All machining on the bottom of the hull is done at various indexing positions at the machine's three stations. A 13-ton self propelled fixture car carries the workpiece through the machine. Hull remains on fixture car until all machining operations on the bottom are completed. Hull is located by gages built into the car. Chip removal for average piece weighs 65 lb. Motors for cutting total more than 250 hp. Cost of the unit was about the same as for standard machines.

through the machine upside down, and all necessary machining on the bottom is done at various indexing positions in the machine's three stations. The motors for cutting alone total more than 250 hp. Chips removed from the average workpiece in the machine total about 65 lb.

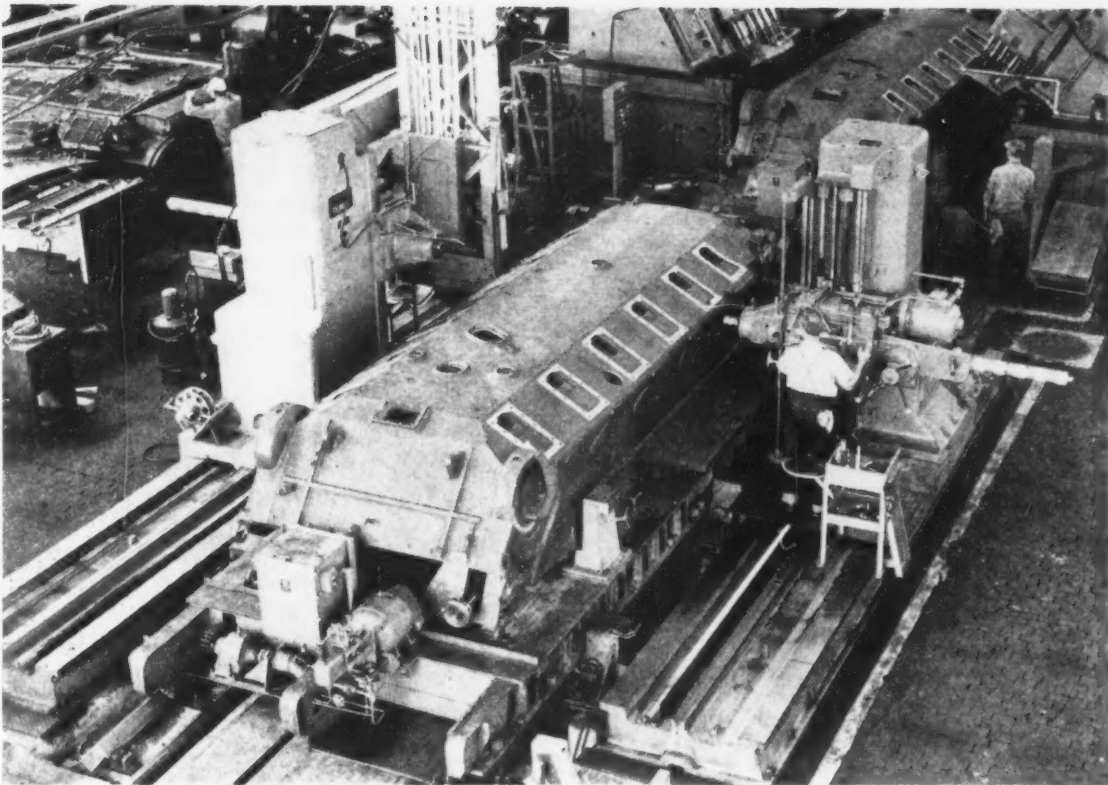
The machine's most interesting feature is the means used to traverse the massive workpiece. A 13-ton self-propelled fixture car is used, running on tracks extending 150 ft from loading to

**T**o the auto industry, biggest user of transfer machines, a transfer machine is big if it has high production, a large number of tools, a large number of operations, or produces chips at a high rate. None of these applies to the huge transfer machine now in use at Massey-Harris Co., Racine, Wis. It is big because it handles a workpiece which alone weighs much more than the completed product of an auto plant. The chips removed from each workpiece in this machine weigh more than the entire workpiece machined by many an ordinary transfer machine.

The workpiece at Massey-Harris is an armor plate weldment weighing 4 tons, the hull of the Army's new Army gun carrier. The hull goes



OVERALL view of Wean transfer machine at Massey-Harris. Weldment, Army gun carrier hull, weighs 4 tons.



OPERATIONS at third station include milling, drilling, reaming, and tapping. V way shows at left, flat way at right.

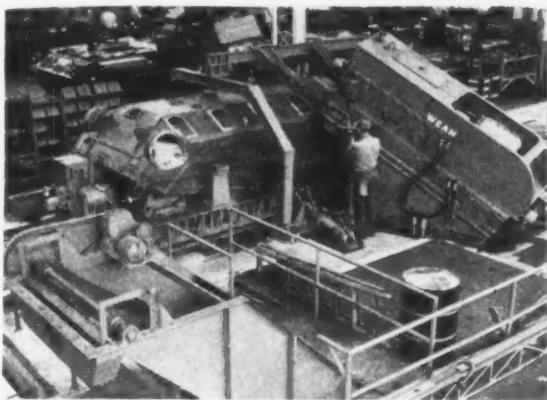
unloading positions. The car's dc drive motors pick up power from a third rail, like a subway car.

Three factors decided Massey-Harris on this huge transfer machine rather than the conventional machine tools which might have been used. First, delivery was about 8 months, rather than the 3 years quoted on some standard machines at the time. Second, once the hull is placed on the fixture car it is never removed until all operations on the bottom have been performed. This is far simpler than moving the huge hull from setup to setup on individual machines. Also, in

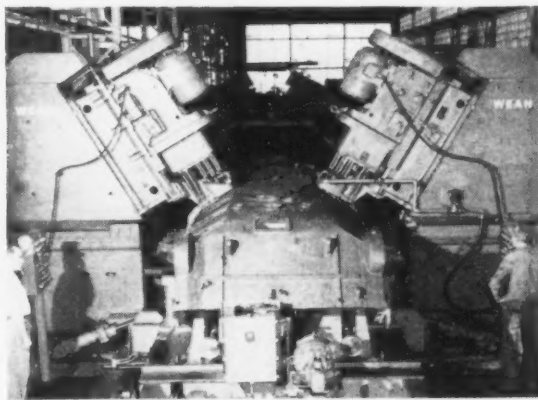
using standard machinery it would have been necessary to adapt the job to the machine while the special machine was designed to fit the job. Third, cost was about the same as for standard tools while design for the specific job gave high efficiency.

At the machine's loading station, the workpiece is lowered onto a fixture car by an overhead bridge crane. The hull is located by means of gages built into the car. A dowel-located spreader bar clamps the hull to the car.

The car has a platform for its driver, who is the machine operator. From this platform he



PADS on slope are milled at first station. In foreground is chip separator conveyor. Clamp holds car during machining.



DRILLING holes in pads at second station. Clamps now on each side behind control panels. Car drive is in foreground.

**"Each step in cycle is automatic after being initiated by the operator . . ."**

operates hydraulic controls to advance the car to approximate location for the first operation at the first station. Guided by index marks, he stops the car and pushes a button which retracts the wheels and leaves the car resting on V and flat ways. Hydraulic plungers on each side of the machine then are advanced to locate the car accurately and clamp it during machining. At the first station, for additional rigidity, there are also held-down clamps from an overhead bridge arrangement.

The first operation is milling six suspension slope pads on each side of the hull. Two heads, one on each side of the machine, each mill one pad per indexing. The operator leaves the car, pushes a button which causes the heads to automatically advance and go through their milling cycle. When they have retracted he gets on the car, lowers the wheels, and advances it to the next index position.

After milling is completed, the car is advanced to the second station, where a pattern of holes is drilled in each pad. The station has four heads, two on each side. Three different patterns of holes are drilled in different pads. One head on

each side has pivoting spindles to enable changing the pattern. Five indexings are required to complete drilling at this station.

The final station makes use of quick-change chucks, since several different operations are performed. First operation is to profile mill the face of the final drive adapter casting. Next, the car is indexed to bring up the rear of the hull. Then a large hole is rough and finish reamed and four mounting holes on each side are drilled and tapped.

Finally, the car is moved out to the end of the tracks and the hull is lifted off by an overhead crane. This same travelling bridge crane is used to pick up the car and return it to the loading position.

Each step in the cycle, except car return, is automatic after being initiated by the operator pushing a button.

The milling cutters are all carbide. Cutting is done dry, with air jets to blow away the chips. Drills, taps, and reamers, are high speed steel. Coolant is used for these operations. The machine has a coolant collecting gutter below floor level. Coolant is delivered to a large sump tank between the first and second stations. A magnetic chip separator at this point removes chips from the coolant.

The machine was planned by Massey-Harris and Wean Equipment Corp., and built by Wean incorporating units by Cincinnati Milling Machine Co., Krueger-Barnes, U. S. Drill Head Co., and Cincinnati Gilbert Co.



CLOSEUP of front of car shows operating station. At lower right is clamp which locates in sockets along car frame.

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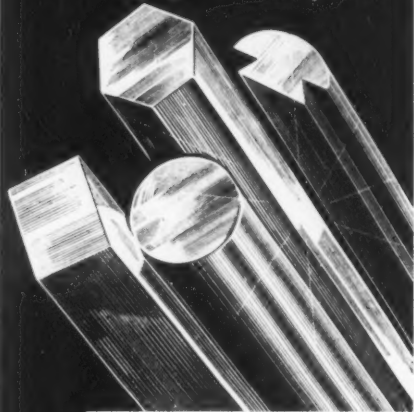
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## Technical Briefs

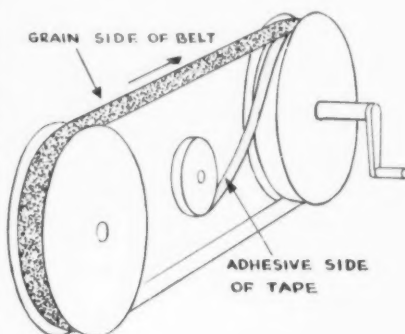
Engineering

### STRONGER BELTS:

**Abrasive belts reinforced with backing tape last longer.**

Abrasive belts subjected to excessive loads may be strengthened quickly and inexpensively with a backing of pressure-sensitive, Fibreglas-reinforced strapping tape.

This simple modification often permits use of these belts for fast removal of metal and in finishing operations formerly considered too severe for commercial equipment of this type.



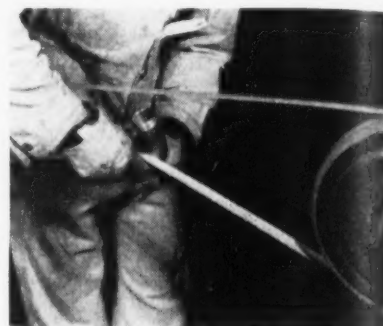
**BACKING** is applied by mounting a roll of tape on a spindle between pulleys. Attach the lead end of the tape to the underside of the belt and rotate belt and pulleys as indicated.



**START THE TAPE** on the belt at the point most distant from the belt joint. Allow about 2 in. overlap.

**Tape Lining**—Reinforcement is accomplished by lining the cloth side of the belt with a lamination of the pressure-sensitive tape. A simple arrangement of pulleys can be set up to expedite the job, engineers of Behr-Manning Corp., Troy, N. Y., report.

Two pulleys are mounted in tandem and the belt to be reinforced is placed over them. A roll of strapping tape is mounted on a spindle between the pulleys, and the lead end of the tape is attached to the underside of the belt. By rotating the belt, the tape will be drawn from the roll and pressed



**POLISHING** the flash marks from a sink trap with a reinforced abrasive belt. Belt is under severe tension.

to the back of the belt as it passes over the first pulley.

**Stronger** — In addition to increasing tensile strength of the belt backing, this lamination of Fibreglas filament tape reinforces the belt joint and increases cross-wise rigidity of belts 3/4-in. or less in width. Edge bowing and twisting are eliminated.

Replacing canvas or mattress ticking set-up belts with coated abrasive belts so strengthened does away with problems of wild grain marks, shedding and ravelling. It also reduces the annoyance of make-ready, cuts set-up time and minimizes maintenance of set-up equipment.

### RESEARCH:

**Large titanium-lined reactors developed for high pressure studies.**

Titanium-lined reactors for use in high pressure research, 9 ft long with an inside diam of 6 in., have been developed to withstand 10,000 psi at 350°C.

All internal parts including the cooling coils of the reactors are made of pure titanium. Models of the reactors, built by Autoclave Engineers, Erie, Pa., have tested to 15,000 psi.

**Titanium Forgings** — Covers were made from titanium forgings 6 in. in diam x 12 in. long.

Autoclave Engineers are specialists in laboratory and pilot plant equipment. They design and make autoclaves, reactors, valves and fittings for use in research in high pressures up to 100,000 psi.

## ELECTRICAL EQUIPMENT:

Regulator for synchronous machines has faster response.

Heart of a new high-speed regulating system for excitation of synchronous machines is the magnetic amplifier. The magnetic amplifier (Magamp) has a shorter time delay than a rotating amplifier, and when used in connection with a self-excited exciter, provides a regulating system that has a faster response.

**Static Device** — The Magamp, developed by Westinghouse, replaces the rotating amplifier and eliminates its brushes and commutator. Result—a system that is fast, reliable, and requires little or no maintenance. Basic elements of the system are the same for any type of synchronous machine, so the Magamp regulator can be used with turbine generators, water-wheel generators, or synchronous condensers.

**Fast Answer** — Test curves showing the rates of response of the Magamps and of the main exciter are given in the drawing. The extremely fast response of the Magamps is illustrated by curve A, which shows that the power Magamp reaches ceiling voltage in approximately 0.02 sec, or 1.2 cycles on a 60-cycle basis.



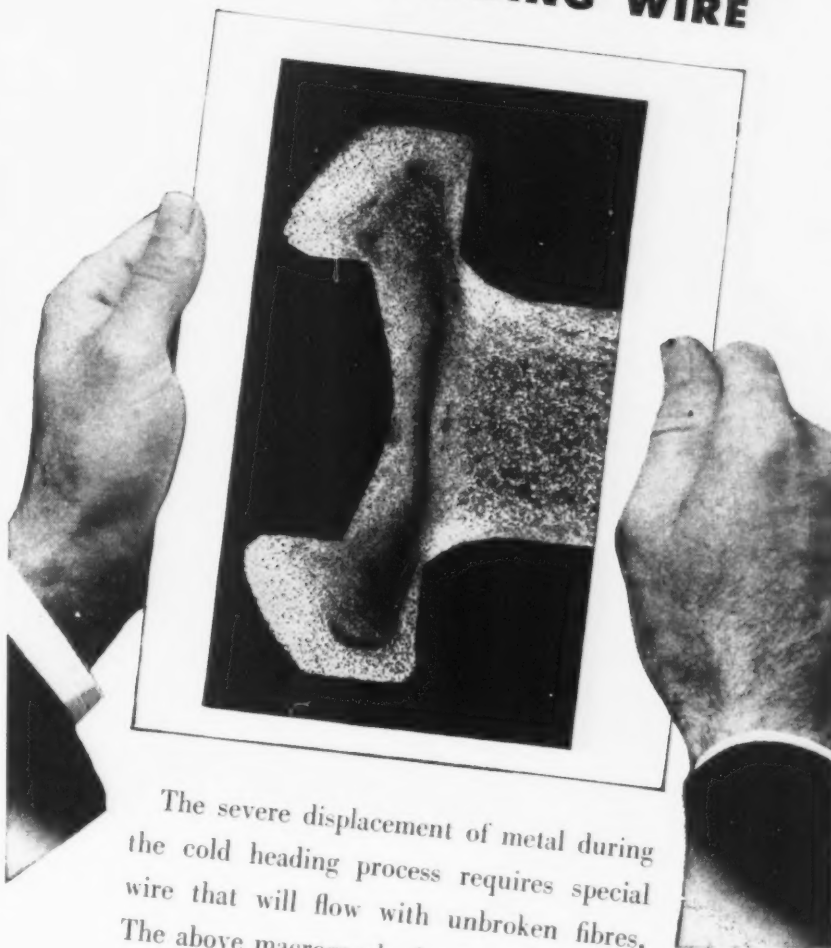
FINDING ROOM for a comfortable bridge game inside this big Kaydon ball bearing is no problem. Precision bearing, made by Kaydon Engineering Corp., Muskegon, Mich., designed for 90-mm gun mounts on Patton M-48 tank is more than 7 ft ID and 8 ft OD.

Turn Page

# KEYSTONE

"SPECIAL PROCESSED"

## COLD HEADING WIRE



The severe displacement of metal during the cold heading process requires special wire that will flow with unbroken fibres. The above macrograph clearly indicates the excellent grain flow in a recessed-head screw made from Keystone "Special Processed" C-1012 Cold Heading Wire.

Keystone's "Special Processed" Cold Heading Wire is available in C-1035 and C-1038 analysis for high strength, heat treated screws and bolts.

INDUSTRIAL WIRE SPECIALISTS

**Keystone Steel & Wire Company**  
PEORIA 7, ILLINOIS



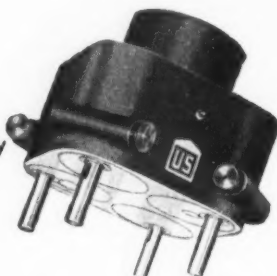
COMPARE THE PRICE ....  
AND PERFORMANCE .....  
*and you'll rely on us for any  
type of multiple spindle fixed  
center, adjustable or individual  
lead screw tapping head.*

Universal joint with slip spindle fixed locating plate.



Two spindle head unit—one spindle fixed, the other spindle adjustable for the fixed positions.

Single eccentric type for equally spaced holes on bolt circles.



UNITED STATES DRILL HEAD CO.  
CINCINNATI 4, OHIO

SINCE 1915

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Write: CIRCULATION MANAGER

*The Iron Age*

100 East 42nd St., New York 17, N. Y.

## Technical Briefs

### BUILDING MATERIAL:

**Glass balloons offer lightweight aggregate for plaster, concrete.**

Tiny glass balloons about the size of grains of sand may present new economies in the building trades by cutting handling costs, and making lightweight construction possible.

The radically new material is a fine-grain lightweight aggregate made by blowing up individual grains of clay in a special furnace. The product is made by Kanium Corp., by a process developed by researchers at Armour Research Foundation of Illinois Institute of Technology.

**Use Rubber Hose** — Concrete mixes using the new material in place of sand or other aggregates are very fluid, even though water content is low. Forms can be filled with concrete pumped through rubber hoses permitting lower construction costs because of the virtual replacement of shovels and awkward metal hose now used.

Concrete, mortar, and plaster made with the material have proved strong and light and have good insulating qualities.

**High Strength** — Plaster specimens made with the aggregate, show a compressive strength greater than that of specimens made with sand. The high strength plaster will permit thinner coatings of plaster to be used on walls than are now possible. Being strong as well as light, the relatively thin layer of the plaster is able to support its own weight.

Individual particles are almost spherical. Size varies with raw material used and method of processing. Sizes from 0.0116 in. to 0.0069 in. in diameter seem to be most useful.

**Blown Blobs** — The material is made in mid-air, in the fiery atmosphere of a special furnace. Ground and screened clay is fed into the top of a vertical furnace. Grains melt in the approximately

2700° F heat of a gas-air flame as they fall through it.

Gasses given off by the tiny melted blobs at the correct instant inflate them into hollow spheres. The little glass balloons drop out of the flame and cool during the remainder of their fall. They are collected at the bottom of the furnace.

As an ingredient of baker clay products it should make possible lightweight refractories and high-temperature insulating materials. It has almost unlimited possibilities, he declared, as a filler in plastics and road-building materials.

## INSTRUMENT CONFERENCE:

**AIEE technical conference meets  
Nov. 18-19 in Philadelphia.**

A special technical conference on Electrically Operated Recording and Controlling Instruments, sponsored by the American Institute of Electrical Engineers, will be held in Philadelphia, Nov. 18 and 19.

Cooperating in the meeting are the Instrument Society of America and the Industrial Instruments and Regulators Div., American Society of Mechanical Engineers. The meeting will be held at the Benjamin Franklin Hotel.

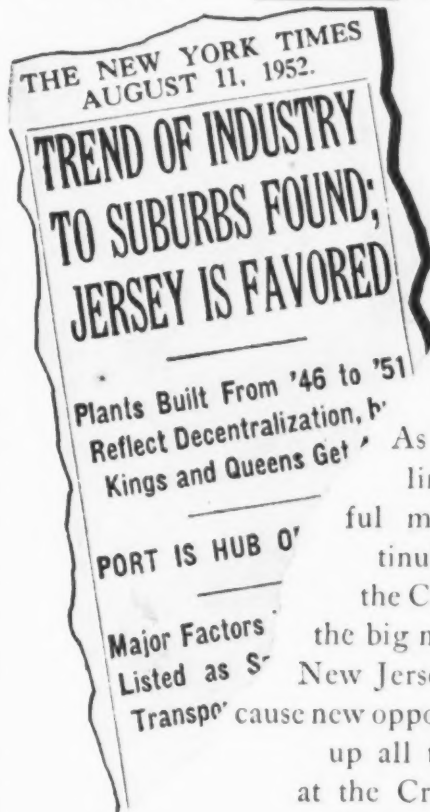
**Horizons**—New developments in the field of self-balancing recorders will be the subject of the morning session Monday, Nov. 17. The afternoon session will cover electric controlling instruments. Applications, systems and new recording instruments will be reviewed.

Turn page



You should see my office this morning, they're really in sad shape.

# What's New in New Jersey



As shown in the recent headlines printed above, successful manufacturers are continuing to favor New Jersey, the Crossroads of the East. That's the big news in industrial circles.

New Jersey makes the news . . . because new opportunities are opening up all the time for manufacturers at the Crossroads of the East.

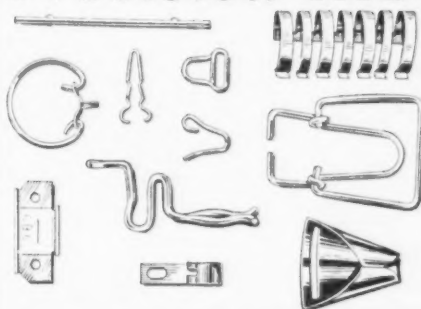
From the busy areas adjacent to metropolitan New York to the bustling industrial sectors in the fast-growing Delaware River Valley, you can find the best plant site for your business . . . right here in New Jersey!



For the reasons behind the success of industry in New Jersey, write for your copy of "An Industrialist's View of the Crossroads of the East". Write Box B, Public Service Electric and Gas Company, 70 Park Pl., Newark, N. J.

**PUBLIC SERVICE**  
... AT THE CROSSROADS OF THE EAST

## Precision Metal Stamping and Wire Forming



Here are typical examples of the thousands of intricate wire forms, stampings and piercings produced by New Jersey Tool & Wire Forming Company. They are products of modern, high-speed machines which can meet your specifications to exact tolerances with real economy.

Write, Wire or Phone Today for FREE CATALOG . . .

**NEW JERSEY TOOL & WIRE FORMING COMPANY**  
62 LAWRENCE ST., NEWARK, N. J. MARKET 3-8553

## ELECTRIC FURNACE:

Timken adds first of three furnaces to expand alloy output.

The first of three electric furnaces has been installed at Timken Roller Bearing Co. A part of a multi-million dollar Steel and Tube Div. expansion program, the furnaces are expected to increase annual output of alloy steel at The Timken Co. by 75,000 tons.

Production will be boosted from 550,000 to 625,000 tons per year. Consuming about 550 kw per ton of steel the new furnace will produce at the rate of 14 to 16 tons of steel per hour, contrasted to the 8½ tons per hour capacity of the openhearth furnace it replaces.

**Top Charging**—The new furnace will be top charged by means

of an overhead crane. A 20,000 kva transformer controls electric current into the new furnace. Sixty-eight electrical controls are used in operating the furnace.

Built by American Bridge Co., the furnace was installed by Hunter Construction Co., Youngstown, Ohio. Some 650 yards of concrete were needed for its foundation. Weight of the furnace plus a full load of molten steel will amount to about 400 tons. This huge weight is moved or tilted, each time a heat in the furnace is poured.

**Mixer**—Most significant feature is the 25-ton electric stirrer. Molten steel must be stirred so the quality of the steel is the same throughout an entire heat. Up to and including present day steel mill practices, stirring steel is a manual process, performed by a melter who pokes around in the molten steel with a long pole.

With the electric stirrer, a magnetic field is set up by rotating electromagnets under the bottom of the furnace. The magnetic field, moving throughout the molten steel in the furnace, thoroughly stirs and mixes the heat.

**Improves Slagging**—The stirrer saves time and increases output. It improves the quality and cleanliness of steel, and improves slagging conditions of the heat, making reliable temperature control and rapid sampling possible.

The \$175,000 mixer is protected from excess furnace heat by a water cooling system, around the stirrer. Flow of water is controlled by 34 thermocouples.

*Cut Cost to a Minimum with*

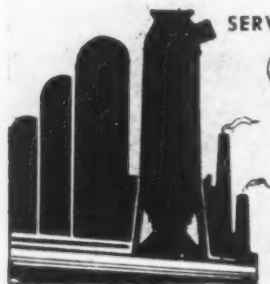


## THE DEMOLITION and REMOVAL EXPERTS

THE BEST EQUIPPED ORGANIZATION IN THE FIELD FOR DOING THE JOB QUICKER, BETTER AND AT LESS COST

- Furnace Tear Outs
- Salamander or Slag Removal
- Material Handling

_____	<b>24 Hour Service, 7 Days Per Week</b>	_____
_____	<b>World Wide Reputation</b>	_____
_____	<b>Consult Us on Your Next Removal Problem</b>	_____



SERVING THE STEEL INDUSTRY FOR OVER 30 YEARS

## CHICAGO CONCRETE BREAKING CO.

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GENERAL OFFICES: 12233 Avenue O, Chicago 33, Ill. BAyport 1-8400



There, does that answer your question?

## SANDING FIXTURE:

Finishing of wedges speeded up, operator fatigue reduced.

Use of a special holding fixture with a coated abrasive belt has doubled the rate of finishing paper-roll-holding wedges in the machine room at Behr-Manning Corp., Troy, New York. And machine operator fatigue was cut nearly in half.

The fixture is a wooden 2 x 4, notched to accommodate five wedges, and fitted with a curved handle for operator's comfort and safety. From the long side of each notch project the points of two wood screws. To these points the wedges are hammered and held temporarily for sanding. The wedges are smoothed on the bottom and the bottom edges are rounded off.

Time to sand one set of 5 wedges is about 35 sec, including time to load and unload the fixture. It takes over 1 min to sand an equal number of wedges, one at a time.

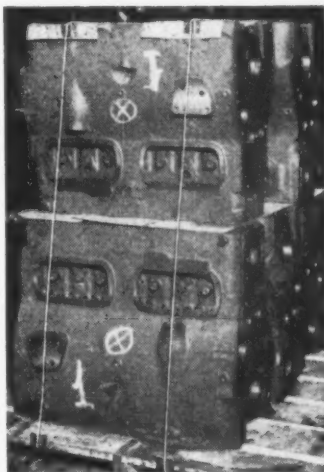


WOOD SCREWS project from notches of wedge sanding fixture. Wedges are hammered into place over screw points which hold them temporarily for sanding.

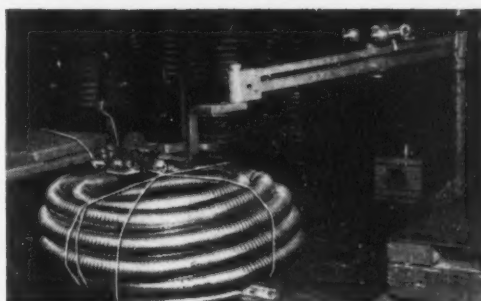


FIVE WEDGES, used to hold stacks of large paper rolls from moving, are sanded at once by rocking the holding fixture across a travelling abrasive belt. Fixture, with abrasive belt, upped output 100 pct.

## Have you a tying problem?



Diesel engine cranks are palletized for interplant movement. 3000 lb. load is firmly secured with 2 Gerrard Straps. (Photo courtesy International Harvester Company, Industrial Power Division.)



This flexible metal hose is securely fastened with 4-way reinforcement. The Gerrard machine on suspension arm is available over a wide work area.

## Perhaps GERRARD can solve it!

● The Gerrard Method of Round Steel Strapping is most versatile. It is equally adaptable to small bundles, heavy pallets or carload stowage. Gerrard Strapping complies fully with Army-Navy specifications JAN-P-106A, JAN-P-107 and JAN-P-108 for overseas packaging. It provides firm, tight, secure reinforcement for both regular and odd-shaped bundles. Every Gerrard machine tensions, ties and cuts the strapping quickly and efficiently. There is no waste motion or lost time.

A Gerrard engineer will gladly give you detailed information on Gerrard's low cost, speed of operation and adaptability.

Write for a free copy of the *Blue Book of Packaging*.



GERRARD STEEL STRAPPING DIVISION  
UNITED STATES STEEL COMPANY  
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**U-S-S GERRARD ROUND STEEL STRAPPING**

UNITED STATES STEEL

## When you think of STAINLESS STEEL FASTENINGS think first of ANTI-CORROSIVE

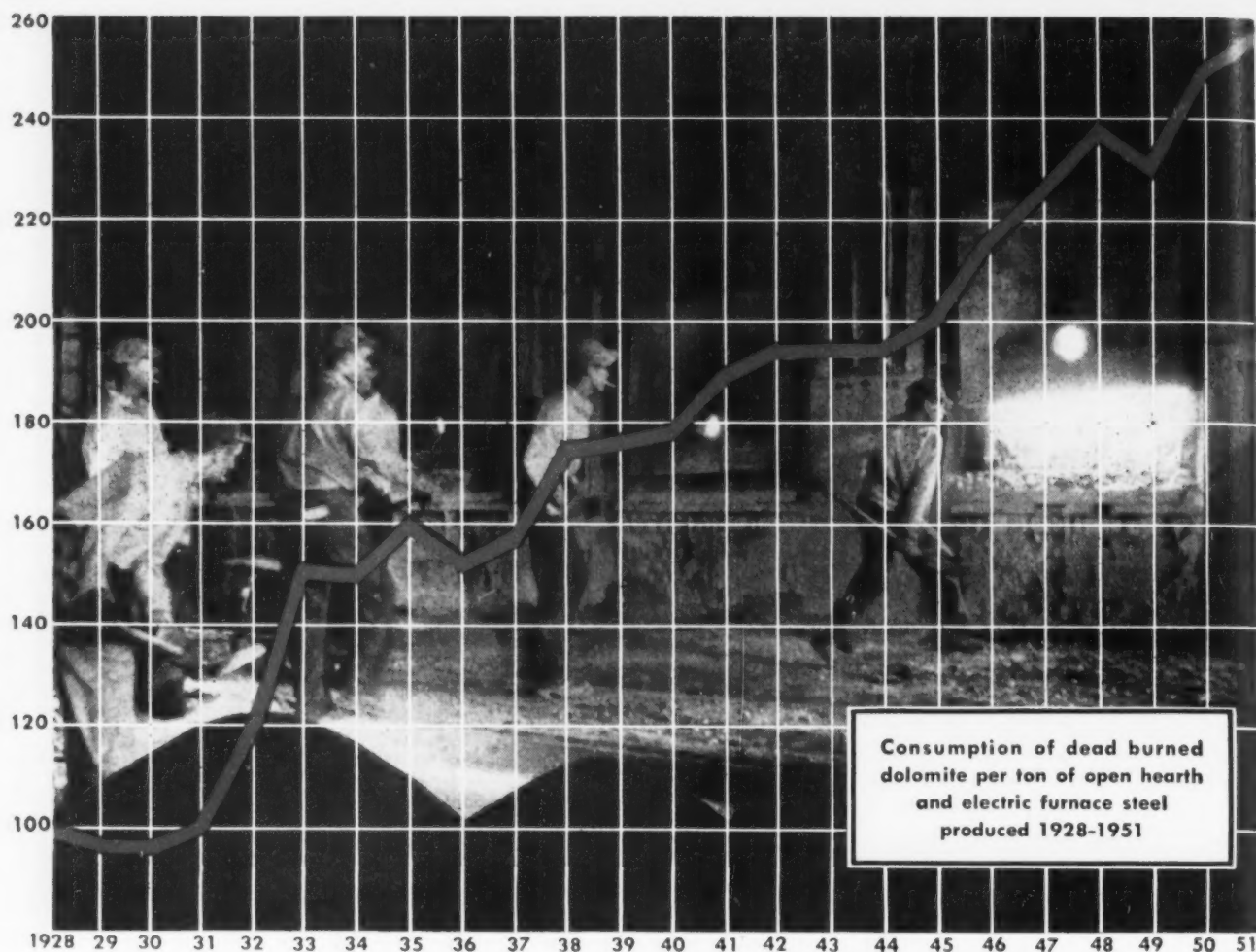


Anti-Corrosive has millions of stainless steel fastenings in stock for immediate delivery . . . plus exceptional production capacity that can fill your requirements beyond stock items faster, better!

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Metal Products Co., Inc.  
**Manufacturers of STAINLESS STEEL FASTENINGS**  
CASTLETON ON HUDSON, NEW YORK

**25 YEARS OF  
LEADERSHIP  
IN FASTENINGS OF  
STAINLESS STEEL**



## just what is dead burned dolomite?

**I**T is a hearth maintenance refractory made from a relatively inexpensive raw material (dolomite). Under properly controlled manufacturing processes, dead burned dolomite develops certain inherent qualities advantageous to efficient, low cost maintenance—qualities which have led to a steadily widening acceptance by the steel industry.

Typically, dolomite suitable for dead burning shows a chemical analysis of lime 30.4%, magnesia 21.6%, silica 0.3%, other oxides 0.2% and carbon dioxide 47.5%. Prior to dead burning, quarried dolomite is classified to proper sizes and the very fine

particles, along with clay and silt, are removed by washing.

The sized, washed dolomite granules, proportioned with a small percentage of iron oxide, travel through rotary kilns heated to above 3000°F. As they pass through the hot gases, the particles are first calcined, giving up approximately half their weight of carbon dioxide, and then sintered and shrunk to dense, hard clinkers. High temperature reactions convert calcium oxide to crystalline lime and magnesium oxide to periclase. Some lime also combines with iron oxide and silica to serve the refractory as a bonding agent.

The resultant product has been variously called "double burned", "roasted", "sintered", "clinkered", "prepared", "black" and "dead burned" dolomite. Of these designations, dead burned is now the generally accepted term, indicating as it does the characteristic hard, dense, inert, crystalline, highly refractory quality of the material.

Dependable dead burned dolomite, marketed under the well-known trade names Magnefer and Syndolag, is manufactured by Basic Refractories at its Ohio Works—recently expanded to meet the industry's ever increasing use of this refractory.



*Basic Refractories Incorporated*

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Exclusive Agents in Canada: REFRACTORIES ENGINEERING AND SUPPLIES, LTD., Hamilton and Montreal

# Materials Will Ease But Profits Face OPS Squeeze

**Steel supplies still tight . . . But record production pace should speed catching up with demand . . . Manufacturers chafe under profit-squeeze policy . . . Is price control doomed?**

End of price controls may come sooner than most people had expected. Weight of its own paperwork is putting a staggering burden on budget-trimmed Office of Price Stabilization. At the same time its profit-squeeze policy toward manufacturers is bringing an avalanche of complaints.

Crux of the problem rises from OPS's pass-through allowance for higher steel costs, but not for higher labor, freight and other material costs. In most manufacturing plants the latter increases amount to much more than steel price rises. This hits manufacturers where it hurts most—profits.

**Tight Squeeze** — Here's what they face: Labor costs of many steel consumers have or will advance in line with labor cost advances of steel producers. A number of companies, under contract with the same union as steel firms, have not only been forced to grant the same wage increases, but also have had to give workers one more month retroactivity. Freight rates have advanced and cost of materials other than steel is rising.

Of course higher steel costs averaging \$5.20 per ton may be passed on in higher prices. But in many manufactured articles this increase is slight. Of far greater importance to manufacturers are cost increases other than steel which can not be passed on.

**Not Much Help**—One company, now seeking relief from what it charges is unfair treatment from OPS, estimates its raw materials costs have increased 7 pct. Labor and freight increases are in addition to that. Yet price increases

allowed this firm because of higher steel costs will probably be less than 2.5 pct.

Irate businessmen, visiting, calling, or telegraphing Washington, find their only recourse for relief is under the so-called industry earnings standard, to them a fuzzy and controversial yardstick. Because of the diversity of operations of some companies, application of this formula would require reams of statistics, red tape and time. Meanwhile, profits will take a beating.

**Slim Chance**—Preliminary work toward applying the standard is underway in a number of steel consuming industries including fasteners, forging, internal combustion engines, metal laths and others.

Some companies that are so far eligible for no more than a 2 or 3 pct price increase insist that their costs have gone up several times that amount.

**Better Supply**—The steel supply outlook for consumers is rapidly turning brighter. True, most steel items are still hard to get in quantities large enough to support high-level manufacturing, and at the same time restore depleted inventories. But steel production, which has been gaining steadily from the disastrous strike of June and July, is now fully recovered. For the second week in a row the industry hopes it will be able to operate at 104 pct of rated capacity.

Barring unforeseen trouble, it looks as if the industry will be able to set an alltime record during October for steel produced in

one month. Previous monthly record was hung up last March when steel companies averaged 102.2 pct of rated capacity, before labor trouble started affecting operations. March production was a little over 9.4 million net tons of raw steel; by holding its present rate, the industry could turn out close to 9.6 million tons in October.

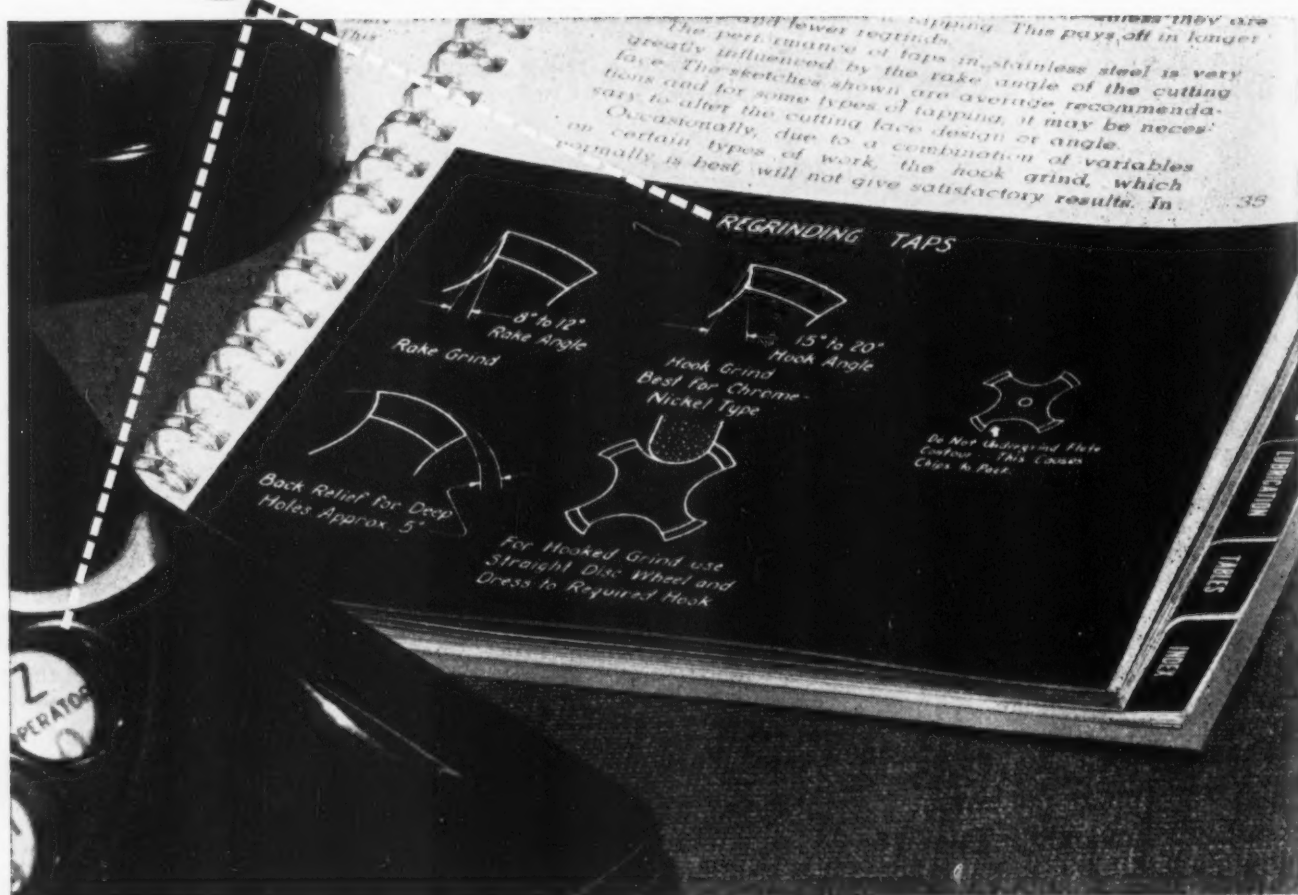
**Room to Improve**—During the remainder of this year the industry may be able to hang up some seemingly fantastic operating rates. This is because the industry's actual capacity is far above official rated capacity of 108.6 million tons published at the first of the year. By midyear the expansion program had brought actual capacity above 112 million tons; and, despite strike-caused delays, year-end capacity is expected to be about 115 million net tons. Capacity ratings make allowance for about one-eighth of production facilities to be idle for repairs.

**Product Rundown** — Although some easing has been noted in wire products, most tonnage items continue in tight supply. Sources which had been expecting some easing in sheet demand report consumers' appetite for both hot and cold-rolled sheets still very strong. Bars, plates, structurals, and oil country goods are as tight as had been expected. Hot-topped and killed steel grades are particularly difficult to obtain. Forging quality billets are tight as ever.

There are reports that uneven sheets are causing no little trouble with dies in automotive press plants. They are using sheets that, while perfectly sound for use, are not of the quality usually demanded for high production dies. Result: Die damage is reported heavy. This is just one of the extra costs of high production in Detroit.



## MARKS YOUR ANSWERS



## to problems where you're TAPPING stainless

Let's face it. Even in the best plants, machining problems come up from time to time.

Maybe tapped holes aren't always accurate. Or taps may become dull too soon. The point is that you don't have to put up with difficulties on a Stainless

tapping job. Or any Stainless machining job, for that matter.

More and more production men are finding a quick and sure way to get the results they want, in a hurry. They just pick up the phone and call the nearest

Carpenter mill branch warehouse for personal help and printed information to solve specific problems. And it works.

It's what you might call a "Stainless Prescription Service". You name the problem and Carpenter works with you to find the answer. Try it today. The chances are that we can put our Stainless experience to work, to your advantage.

### Shop notes on TAPPING stainless to help your men improve results and conserve stainless steel

**IF TAP CUTS WHEN BACKING OUT...** This is usually caused when tap cuts oversized hole, leaving no support for tap when backing out, thereby permitting it to cut. A "floating" tap holder or wobbly spindle contribute to this condition.

**IF THREADS ARE ROUGH...** If all other factors and variables have been carefully checked, try a negative grind on the heel of the tap. This overcomes tap tearing threads when backing out. Insufficient hook angle can also cause roughness in threads.

**WHEN TAP RUNS HOT, DULLS...** This invariably is due to tapping speed being too high. Check the chart in Carpenter's Notebook for recommended speed.

For more information on Tapping, use Carpenter's "Notebook on Machining Stainless Steels".



# Carpenter

## STAINLESS STEEL

takes the problems out of production



The Carpenter Steel Company, 121 W. Bern St., Reading, Pa.  
Export Department: The Carpenter Steel Co., Port Washington, N. Y.  
—"CARSTEELCO"

## Market Briefs and Bulletins

**New Price Policy**—U. S. Steel Co. has established a new price policy on tinplate products. Instead of announcing price changes toward end of each year to be effective during the succeeding year, the company will announce prices twice each year. The prices will apply during the periods April through September and October through March. Current prices will continue in effect through March 31, 1953.

**Boron Nitride Cut**—Norton Co., Worcester, Mass., has made a 31¼ pct price reduction on boron nitride, which makes the new price \$55 per lb. Price 2 years ago was \$250 per lb.

**Protest**—Manufacturers of mining machinery are clamoring for revocation of the 30-day steel inventory ceiling. They have told control officials that when they get mill deliveries the shipments often represent a supply for 90 days or more. Industry wants a priority rating on a par with military and direct defense industries. National Production Authority says it will try to work out a plan to permit industry-wide exceptions to the inventory control.

**Labor Contracts**—Westinghouse Electric Corp. has signed agreements with unions representing 95 pct of its employees. Wage and salary increases provided will cost Westinghouse \$25 million annually. In another move, Westinghouse raised prices of its transformers 1.3 pct to offset higher metal costs. The price hike does not include increased labor or transportation charges.

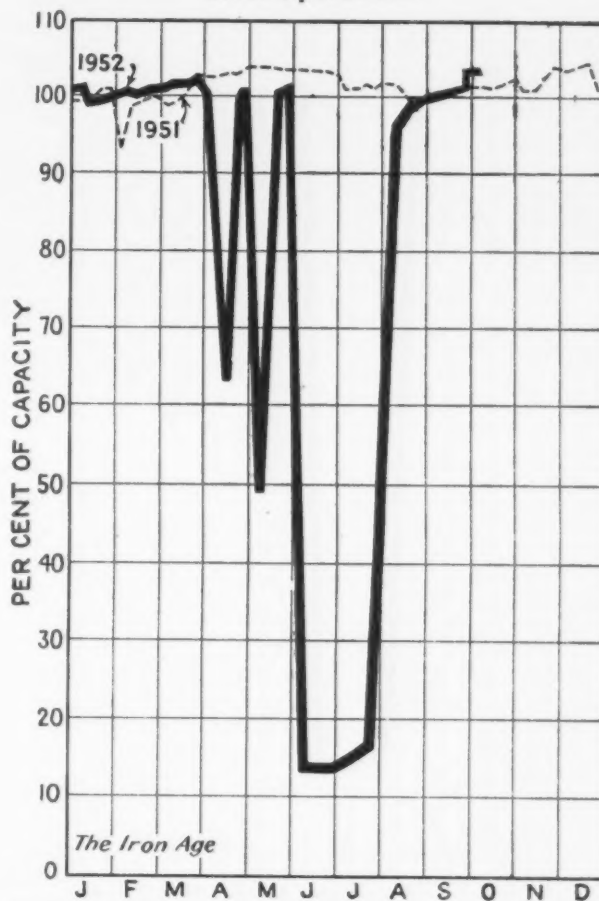
**Steel Moving**—Warehouse shipments are coming through at a good rate and cover a fair cross section of steel items. While demand keeps inventories at a low level, they report some increase in business over the past 2 weeks. This is interpreted to mean that for the first time since the strike their stocks are beginning to offer the customer some variety from which to choose.

**Coal Price Rise**—Retail price increase of 35¢ per ton for anthracite coal and 25¢ per ton for bituminous has been granted by Office of Price Stabilization. Government survey of earnings indicated retailers were eligible for price relief on basis of earnings standard criteria. Anthracite dealers showed a greater reduction in earnings than soft coal dealers and were allowed a larger price adjustment. Authority for the increase is Amend. 7, SR 2, GCPR.

**Tungsten, Moly Quotas**—Under revised fourth quarter quotas for distribution of tungsten and molybdenum, U. S. will get 2510 metric tons of tungsten and 4202 tons of molybdenum. Smaller amounts of tungsten will go to 15 other free-world areas, while 10 other areas have been allotted supplies of tungsten ranging down to as little as a quarter-ton.

**Pipe Standardization**—A meeting will be held between government and industry spokesmen to discuss the possibility of further standardization of heavy wall pipe in sizes of 8½ to 16 in. Pipe fabricators complain that there are sizes for which steel mills refuse to accept orders.

Steel Operations



District Operating Rates—Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Wheeling	South	Ohio River	St. Louis	East	Aggregate
Sept. 21.....	105.0*	106.0	105.0*	100.0	106.0*	104.5	103.0*	107.0*	100.0*	101.0	90.0	106.5	92.0	104.0*
Sept. 28.....	107.0	106.5	104.0	100.0	105.0	104.5	102.0	109.0	100.0	101.0	90.0	108.0	93.5	104.0

Beginning Jan. 1, 1952, operations are based on annual capacity of 108,587,670 net tons.

\* Revised.

## OPS to Consider Copper Pricing

Price agency agrees to hear industry gripes soon . . . Action in doubt . . . Announce first quarter quotas about the same as third quarter's . . . Zinc mixed—By R. L. Hatschek.

Military requirements for brass mill products have temporarily leveled off, according to Washington officials. But this is not seen as helping to fill non-defense requirements because the copper picture is cloudy again. Controls planners say there are several reasons for the haziness in copper. These include pricing, stockpiling and the domestic labor situation.

The price muddle (see THE IRON AGE, Sept. 18, p. 198) is due for some airing at least. Office of Price Stabilization has agreed to call a meeting to discuss the problem in about a week. Whether any action will be taken can only be guessed but probably the best compromise would be to raise the ceiling price substantially. This solution would give needed relief while still keeping reins, though looser ones, on the copper market.

**Allotments**—Refined copper allocations to the brass mill industry for the first quarter of next year are now scheduled at about the same level as third quarter quotas. This will represent a cut-back from fourth quarter allotments of the red metal. October quotas for brass mills and copper wire mills are set at 56,667 tons each, a few thousand tons shy of the third quarter averages but still better than the August 1951 to June 1952 averages.

### MONTHLY AVERAGE PRICES

The average prices of the major non-ferrous metals in Sept. based on quotations appearing in THE IRON AGE were as follows:

	Cents Per Pound
Electrolytic copper, Conn. Valley	24.50
Lake copper, delivered	24.625
Straits tin, New York	\$1.2138
Zinc, East St. Louis	14.03
Zinc, New York	14.86
Lead, St. Louis	15.80
Lead, New York	16.00

**Still 60-40** — Allocations will continue to be made on a 60 pct domestic, 40 pct foreign basis despite a 54.9-45.1 ratio of deliveries in the third quarter. Representatives of the brass mills have complained of sluggish deliveries from Chile, largely due to a lack of shipping space.

National Production Authority attributed any apparent recent easing in copper supplies to three factors: (1) Generally lower level of manufacturing resulting from the steel strike, (2) reshuffling of inventories, and (3) an improvement in supplies coming from foreign producers.

**Zinc Market**—Dual pricing has also been prevalent in the zinc picture lately but this time it cannot be blamed on price controls since this metal is selling at well below

ceiling levels no matter which price you consider. Some sellers have been sticking firmly to the 13.50¢ price, some have insisted on the 14.00¢ tag, and others have fluctuated from one level to the other. Business has been transacted at both figures, with the predominant tonnages going at the lower price.

General Services Administration, the government's stockpiling agency, purchased what was reported to be a substantial quantity at 13.50¢ per lb on an East St. Louis basis. The government stockpilers also did some business in lead.

**Tin Trading**—Domestic tin consumers just didn't seem to want any of the metal last week. Reconstruction Finance Corp. sold only 210 tons during the week, compared to 895 tons the week before. Neither was there much business in the regular trade channels, where sales were made at \$1.21¾ and \$1.21½ per lb. RFC sales, of course, were made at \$1.21½.

The Singapore market was reported active, with a good volume of sales and a price at the end of the week a bit higher than a New York equivalent of \$1.22½.

**Active Selling**—Aluminum producers are all confident of their ability to sell all the metal they will make from expanded facilities in a peacetime market. But they know their salesmen will be wearing out shoe leather. Reynolds Metals Co. is starting a virtual door-to-door campaign to sell manufacturers on the idea of industrial packaging with aluminum foil.

The firm has equipped a 30-ft semi-trailer as a demonstration unit for all types of foil packaging.

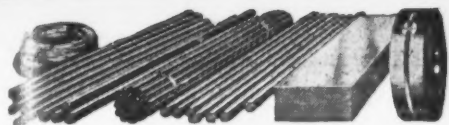
Test equipment and trained personnel will demonstrate applications to the prospective customer's specifications right in his own plant.

### NONFERROUS METAL PRICES

	Sept. 24	Sept. 25	Sept. 26	Sept. 27	Sept. 29	Sept. 30
Copper, electro, Conn.	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake delivered	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York	\$1.21¾	\$1.21½	\$1.21¾	....	\$1.21¾	\$1.21¾*
Zinc, East St. Louis	13.50	13.75	13.75	13.75	13.75	13.75
Lead, St. Louis	15.80	15.80	15.80	15.80	15.80	15.80

Note: Quotations are going prices.

\*Tentative.

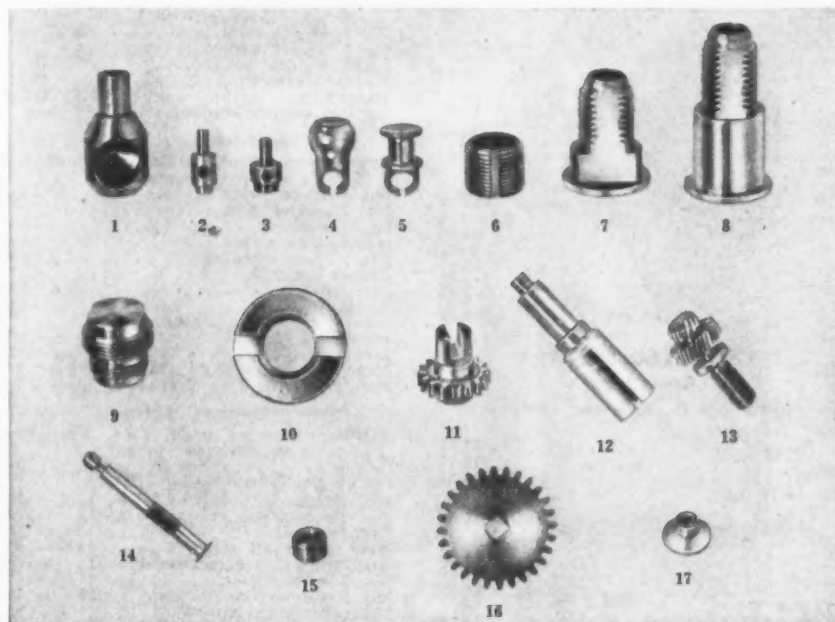


BRIDGEPORT BRASS COMPANY

# COPPER ALLOY BULLETIN



MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND.—IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL



Screw machine items which required milling, side drilling, slotting, broaching or flaring operations were completely finished on the screw machine without the necessity of "secondary" operations. Courtesy The Mattatuck Mfg. Co., Waterbury, Conn.

## Complete Screw Machine Operation

...including milling, slotting, broaching, cross drilling

Ingenuity, coupled with existing know-how, can often incorporate costly so-called "secondary" operations such as milling, side drilling, slotting, broaching, spinning, flaring, etc., as a complete screw machine operation.

Aside from substantial cost savings, advantages are:

1. Space and labor savings, since no additional machines and operators are needed.
2. Time saving — because some of the "secondary" operations are performed simultaneously with the preparation of the blank.
3. Economical — because the complete job leaves the machine with no parts in unfinished stages subject to possible spoilage or loss.

Since machine setup time takes considerably longer because of special chucks, holding fixtures, timing cams, etc., complete screw machine operation usually is justified on long runs.

### Cross Drilling

Samples 2 and 3 were cross drilled while the machine prepared the blanks,

the pick-up arm removing the finished blanks from the spindles and transferring them to the position where the cross drilling operations were performed. Sample 1 is partially cross drilled; samples 2 and 3 are cross drilled and chamfered on both sides of the hole; sample 4 was cross drilled from a side slide, then picked up and slotted to complete the piece; and sample 5 was cross drilled on a stopped spindle, then milled from the turret to make the front section complete.

### Milling

Sample 6 illustrates side milling performed after the pick-up arm removes the blank and sets it into position for the milling operation.

Nos. 7 and 8 illustrate flat milling on a stopped spindle—with the milling saw installed in a fixture on the turret.

No. 9 illustrates straddle milling. Here the transfer arm picks up and holds the piece while the two saws mounted on the slotting arbor perform the straddle milling. No. 10 illustrates

section milling which is performed with the help of a special twin-milling cutter head mounted in the transfer station.

### Cross Slotting

No. 11 illustrates slotting on the end with a stopped spindle, the movable saw being mounted on the cross slide to accomplish a flat bottom on the milled slot. On sample No. 12, the saw was on the turret, and after one slot was cut, the saw was indexed 90° and the second slot was cut. No. 13 illustrates a slot through the threaded end. A wedge-shaped tool followed up the saw and expanded the slot for spring action in the threaded portion.

### Flaring, Broaching, Shearing

Sample No. 14 was end flared or expanded by a spinning tool mounted in the turret. Nos. 15 and 16 illustrate broaching operations which were performed with the piece in the spindle prior to cutoff. No. 17 illustrates a combination shearing and forming operation which was performed on the screw machine by using a punch in a turret station.

### Statistical Quality Control

To meet the tight tolerance specifications called for on items used for defense production, it is almost necessary to have the Inspection Department utilize "Statistical Quality Control." For example, five samples taken at random from each machine are carefully gauged and the results are plotted on special cross-sectioned paper, which give average and range of the specific measurements on the vertical axis and the time element on the horizontal axis. The position which these points take indicates the rapidity of tool wear, the need for tool adjustments, tool sharpening, or possibly, a change to a higher grade of tool stock such as tungsten-carbide.

With few exceptions, the parts illustrated were made from Ledrite 6, free cutting brass rod, which contains approximately 61% copper, lead 3.4% and zinc remainder. It has a machinability rating of 100 per cent and is the most widely used alloy. For specific information on rod alloys write for "Technical Handbook." (8814)

# Nonferrous Prices

## MILL PRODUCTS

(Cents per lb, unless otherwise noted)

### Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.188 in., 2S, 3S, 31.6¢; 4S, 61S-O, 33.6¢; 52S, 35.8¢; 24S-O, 24S-OAL, 34.6¢; 76S-O, 76S-OAL, 41.9¢; 0.081 in., 2S, 3S, 32.8¢; 4S, 61S-O, 35.2¢; 52S, 37.4¢; 24S-O, 24S-OAL, 35.8¢; 76S-O, 76S-OAL, 43.9¢; 0.032 in., 2S, 3S, 34.5¢; 4S, 61S-O, 39.0¢; 52S, 41.8¢; 24S-O, 24S-OAL, 43.8¢; 76S-O, 76S-OAL, 54.8¢.

Plate 1/4 in. and heavier: 2S-F, 3S-F, 29.7¢; 4S-F, 31.7¢; 53S-F, 33.4¢; 61S-O, 32.3¢; 24S-O, 24S-OAL, 34.0¢; 76S-O, 76S-OAL, 40.7¢.

Extruded Solid Shapes: Shape factors 1 to 5, 35.5¢ to 77.2¢; 12 to 14, 36.2¢ to 93.5¢; 24 to 26, 38.7¢ to 112.2¢; 36 to 38, 45.9¢ to 171.9¢.

Rod, Rolled: 1.064 to 4.5 in., 2S-F, 3S-F, 39.4¢ to 35.2¢; cold-finished, 0.375 to 3 in., 2S-F, 3S-F, 42.5¢ to 36.8¢.

Screw Machine Stock: Rounds, 11S-Ts, 1/4 to 1 1/32 in., 56.2¢ to 44.1¢; 3/8 to 1 1/2 in., 43.6¢ to 41.0¢; 1 9/16 to 3 in., 40.4¢ to 37.8¢; 17S-Ts, 1.6¢ per lb lower. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 41.5¢ to 30.5¢; 52S, 50.4 to 36.8¢; 56S, 53.6¢ to 44.1¢; 17S-T4, 56.7¢ to 39.4¢; 61S-T4, 50.9¢ to 38.9¢.

Extruded Tubing: Rounds, 63S-T5, OD in in.: 1 1/4 to 2, 38.9¢ to 56.7¢; 2 to 4, 35.2¢ to 47.8¢; 4 to 6, 35.7¢ to 43.6¢; 6 to 9, 36.2¢ to 45.7¢.

Roofing Sheet: Flat, 0.019 in., x 28 in., per sheet, 72 in., \$1.199; 96 in., \$1.598; 120 in., \$1.997; 144 in., \$2.398. 0.24 in. x 28 in., 72 in., \$1.448; 96 in., \$1.931; 120 in., \$2.414; 144 in., \$2.897. Coiled sheet: 0.019 in. x 28 in., 26.6¢ per lb; 0.024 in. x 28 in., 28.2¢ per lb.

### Magnesium

(F.O.B. mill, freight allowed)

Sheet and Plate: FSI-O, 1/4 in., 63¢; 3/16 in., 65¢; 1/2 in., 67¢; B & S Gage 10, 68¢; 12, 72¢. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam in., 1/4 to 0.311 in., 74¢; 1/2 to 3/4 in., 57.5¢; 1/2 to 1.749 in., 53¢; 2 1/2 to 5 in., 48.5¢. Other alloys higher. Base up to 3/4 in. diam, 10,000 lb; 3/4 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M, in weight per ft. for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢; 0.22 to 0.25 lb, 5.9 in., 59.3¢; 0.50 to 0.59 lb, 8.6 in., 56.7¢; 1.8 to 2.59 lb, 19.5 in., 53.8¢; 4 to 6 lb, 23 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/2 lb, 10,000 lb; 1/2 to 1.80 lb, 20,000 lb; 1.80 and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057; 1/4 in. to 5/16, \$1.40; 5/16 to 3/4, \$1.26; 3/4 to 1, 93¢; 1 to 2 in., 76¢; 0.165 to 0.219, 5/8 to 3/4, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1 1/2 in., 10,000 lb; 1 1/2 in. to 3 in., 20,000 lb; 3 in. and larger, 20,000.

### Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$10; Bar, HR or forged, \$6; Forgings, \$6.

### Nickel and Monel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel
Sheets, cold-rolled	77	60 1/2
Strip, cold-rolled	83	63 1/2
Rods and bars	73	58 1/2
Angles, hot-rolled	73	58 1/2
Plates	75	59 1/2
Seamless tubes	106	93 1/2
Shot and blocks		53 1/2

### Copper, Brass, Bronze

(Freight prepaid on 200 lb)

	Sheet	Rods	Extruded Shapes
Copper	45.52		45.12
Copper, h-r		41.37	
Copper, drawn		42.62	
Low brass	42.34	42.03	
Yellow brass	40.17	39.86	
Red brass	43.10	42.79	
Naval brass	44.72	38.78	40.04
Leaded brass			38.02
Com's bronze	44.39	44.08	
Mang. bronze	48.44	42.83	43.89
Phos. bronze	64.72	64.97	
Muntz metal	42.69	38.25	39.50
Ni silver, 10 pct	51.96	54.18	

## PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, 20.00  
freight allowed 19.00  
Aluminum pig 39.00  
Aluminy, American, Laredo, Tex., \$1.56  
Beryllium copper, 3.75-4.25% Be  
Beryllium aluminum 5% Be, Dollars  
per lb contained Be \$69.50  
Bismuth, ton lots \$2.25  
Cadmium, del'd \$2.00  
Cobalt, 97-99% (per lb) \$2.40 to \$2.47  
Copper, electro, Conn. Valley 24.50  
Copper, Lake, delivered 24.625  
Gold, U. S. Treas., dollars per oz. \$35.00  
Indium, 99.8%, dollars per troy oz. \$2.25  
Iridium, dollars per troy oz. \$200  
Lead, St. Louis 15.80  
Lead, New York 16.00  
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb. 24.50  
Magnesium, sticks, 100 to 500 lb. 42.00 to 44.00  
Mercury, dollars per 76-lb flask, f.o.b. New York \$193 to \$195  
Nickel electro, f.o.b. N. Y. warehouse 59.58  
Nickel oxide sinter, at Copper Creek, Ont., contained nickel 52.75  
Palladium, dollars per troy oz. \$24.00  
Platinum, dollars per troy oz. \$90 to \$93  
Silver, New York, cents per oz. 83.25  
Tin, New York \$1.21 1/2  
Titanium, sponge \$5.00  
Zinc, East St. Louis 13.75  
Zinc, New York 14.58  
Zirconium copper, 50 pct \$6.20

## REMELTED METALS

### Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot  
No. 115 27.25  
No. 120 26.75  
No. 123 26.25  
80-10-10 ingot  
No. 305 33.00  
No. 315 30.50  
88-10-2 ingot  
No. 210 41.50  
No. 215 40.00  
No. 245 34.50  
Yellow ingot  
No. 405 23.25  
Manganese bronze  
No. 421 30.50

### Aluminum Ingot

(Cents per lb, 100,000 lb and over)

95-5 aluminum-silicon alloys  
0.30 copper, max. 20.6  
0.60 copper, max. 20.4  
Piston alloys (No. 122 type) 20.5  
No. 12 alum. (No. 2 grade) 19.5  
105 alloy 20.6  
195 alloy 20.8  
13 alloy (0.60 copper max.) 20.8  
ASX-679 20.5

### Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97 1/2% 18.80  
Grade 2—92-95% 18.60  
Grade 3—90-92% 18.40  
Grade 4—85-90% 18.20

## ELECTROPLATING SUPPLIES

### Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper  
Cast, oval, 15 in. or longer 37.84  
Electrodeposited 33%  
Flat rolled 38.34  
Forged ball anodes 43  
Brass, 80-20  
Cast, oval, 15 in. or longer 34.31  
Zinc, oval 26 1/2  
Ball, anodes 25 1/2  
Nickel, 99 pct plus  
Cast 76.00  
Rolled, depolarized 77.00  
Cadmium 32.15  
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn. 97 1/2

### Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum 63  
Copper sulfate, 99.5 crystals, bbl. 12.85  
Nickel salts, single or double, 4-100 lb bags, frt. allowed 27 1/2  
Nickel chloride, 375 lb drum 27 1/2  
Silver cyanide, 100 oz lots, per oz. 67 1/2  
Sodium cyanide, 96 pct domestic 200 lb drums 19.25  
Zinc cyanide, 100 lb drum 47.7

## SCRAP METALS

### Brass Mill Scrap

(Cents per pound, add 1/2¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	21 1/2	20 3/4
Yellow brass	19 1/2	17 1/2
Red brass	20 1/2	19 1/2
Comm. bronze	20 1/2	19 1/2
Mang. bronze	18 1/2	17 1/2
Brass rod ends	18 1/2	

### Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
Refinery brass	17.25
Radiators	14.75

\* Dry copper content.

### Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
No. 1 composition	18.50
No. 1 comp. turnings	18.25
Rolled brass	15.50
Brass pipe	16.50
Radiators	14.75

### Aluminum

Mixed old cast	9	9 1/2
Mixed new clips	10	11
Mixed turnings, dry	9	9 1/2
Pots and pans	8 1/2	9

### Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

### Copper and Brass

No. 1 heavy copper and wire	18 1/2	19 1/2
No. 2 heavy copper and wire	17	17 1/2
Light copper	15 1/2	16
New type shell cuttings	15 1/2	16
Auto radiators (unsweated)	14	14 1/2
No. 1 composition	17 1/2	18
No. 1 composition turnings	17	17 1/2
Unlined red car boxes	16 1/2	17
Cocks and faucets	15	15 1/2
Mixed heavy yellow brass	11 1/2	12
Old rolled brass	14 1/2	15
Brass pipe	15 1/2	16
New soft brass clippings	16	16 1/2
Brass rod ends	15 1/2	16
No. 1 brass rod turnings	15	15 1/2

### Aluminum

Alum. pistons and struts	6	6 1/2
Aluminum crankcases	7	7 1/2
2S aluminum clippings	10	10 1/2
Old sheet and utensils	7	7 1/2
Borings and turnings	5	6
Misc. cast aluminum	7	7 1/2
Dural clips (24S)	7	7 1/2

### Zinc

New zinc clippings	8	8 1/2
Old zinc	6	6 1/2
Zinc routings	3 3/4	4 1/4
Old die cast scrap	4 1/2	5

### Nickel and Monel

Pure nickel clippings	35	36
Clean nickel turnings	35	36
Nickel anodes	35	36
Nickel rod ends	35	36
New Monel clippings	28	29
Clean Monel turnings	20	21
Old sheet Monel	28	29
Nickel silver clippings, mixed	13	14
Nickel silver turnings, mixed	12	13

### Lead

Soft scrap, lead	12 1/2	13
Battery plates (dry)	7	7 1/2
Batteries, acid free	4	5

### Magnesium

Segregated solids	15	16
Castings	14	15

### Miscellaneous

Block tin	100
No. 1 pewter	70
No. 1 auto babbitt	55
Mixed common babbitt	14 1/2
Solder joints	19
Siphon tops	19
Small foundry type	19
Monotype	15 1/2
Lino. and stereotype	13 1/2
Electrotype	12
Hand picked type shells	9 1/2
Lino. and stereo. dross	7
Electro. dross	6 1/2

Six giant impellers like this one, with outside diameters of 145", were produced in "Turbine Nickel-Alloyed Metal" by American Manganese Bronze Company of Philadelphia. Meeting minimum specifications of 80,000 p.s.i. tensile strength, and 20% elongation, they have been installed in 84" vertical volute, bottom suction pumps produced by Worthington Corporation, Harrison, N. J. Each pump, driven by a 22,500 H.P. motor, is designed to deliver 345,000 gallons per minute against a 197-foot head pressure. They provide water for irrigation purposes in the Central Valley Project, in California.



## How a little Nickel

## Buys a lot of Endurance

...is shown by six 24-ton Impellers  
Cast in Nickel-Alloyed Manganese Bronze

This large casting is one of six identical 48,000-pound impellers cast in "Turbine Nickel-Alloyed Metal" . . . a manganese bronze containing 2 to 4 per cent nickel.

The nickel addition increases not only its strength but also its resistance to both erosion and corrosion. Nickel provides a tenacious surface film that retards corrosion penetration and dezincification.

Experience shows that small amounts of nickel in standard bronzes increase yield

strength and shock resistance as much as 25 to 50%. In addition to being a grain refiner and alloy diffuser, nickel increases fluidity of the molten metal, thus helping to minimize misruns and to improve density and pressure-tightness.

At the present time, the bulk of the nickel produced is being diverted to defense. Through application to the appropriate authorities, nickel is obtainable for the production of nickel bronzes for many end uses in defense and defense supporting industries.



**THE INTERNATIONAL NICKEL COMPANY, INC.** 67 WALL STREET  
NEW YORK 5, N. Y.

October 2, 1952

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# Iron and Steel Scrap Markets

## NPA Allocations Bound to Be Piddling

**Authority to revive scrap allocations still rests with NPA  
... Revival will be moderate if it comes at all ... Some areas  
report shortage of freight cars hampering scrap traffic.**

Early this year National Production Authority allocation of scrap constituted a distribution empire as the free market withered in a severe shortage. Resurgence of scrap supply quickly put the axe to allocations—but authority to revive the system rests with NPA.

Any revival of allocations depends on how tight scrap may become this winter. Scrap men reckoning that heavy scrap stockpiles will enable mills to coast along through any moderate shortage now believe that allocations, if revived, will be on the small operations level.

If exhumed they will be for the benefit of smaller consumers who might get hurt in a tightening winter market. Allocations may be used for some specific grades needed by specialty producers. Consensus is now that a severe scrap crisis cannot materialize this year and consequently allocations will be batting in the minor league.

Some districts this week reported a shortage of freight cars, handicapping movement of scrap. In Pittsburgh mills sought to bring scrap to their yards and make cars available for shipments of finished steel.

**Pittsburgh**—A shortage of freight cars is hampering shipments in the Pittsburgh district. Mills are pressing the railroads for two reasons: (1) To bring scrap in, and (2) "make" cars available for shipment of finished steel. Smaller consumers are showing some concern on the question of whether allocations will be resumed. At the moment there seems no hope for this at least until mid-October, if then. Electric furnace scrap continues tight, but there is a difference of opinion on openhearth material. Some sources feel openhearth is easing.

**Chicago**—The market continued firm in steelmaking grades with cast still lagging and interest in blast furnace grades lagging somewhat. Reductions in springboards and resultant freight absorption have forced the actual value of a delivered price slightly down. In electric furnace, the demand for cut structural seems to be holding well although some other grades have been moving slowly. Cast iron car wheels seemed to be moving poorly. In transit preparation remains at ceiling in a few instances, but generally runs several dollars under.

**Philadelphia**—The scrap market was just coasting this week, getting off to a slow start because of the holiday. There seems to be no really energetic effort on the part of consumers to procure scrap. Even mill demand for charging box cast—steady before—has dropped off in tone.

**New York**—Market in steelmaking grades was strong. Some dealers have reported a tapering off in yard preparation activity while a few report they have been very busy. Scrap still finds a home without any trouble but mills are watching classification strictly. Cast grades remain somewhat below ceiling but firmly so.

**Detroit**—Continued strength in the market has virtually eliminated pessimism. The trade is expecting a strong and aggressive market to continue at least 2 more weeks and possibly longer. Blast furnace grades are not strong, but still haven't sagged below ceiling. October industrialists indicate scrap production will be heavy throughout the month.

**St. Louis**—Shipments of scrap iron to this industrial district are low, and some dealers supplies have almost dried up. Suppliers are behind in their performance of deliveries to the mills. Consumers are eating into their reserves, although they still have inventories of from 45 to 90 days.

**Cleveland**—Scrap is flowing into Cleveland and Youngstown at a satisfactory rate. One consumer has scheduled shipments to equalize with unloading facilities. Generally the mills are able to more than balance receipts with consumption despite high operating levels. Freight car supply appears to be tight but not serious.

**Birmingham**—One of the district's mills that made purchases of heavy melting scrap early in the month has asked that all orders be delivered immediately. And the largest consumer, which held up deliveries for lack of storage space for heavy melting scrap, has released a small amount. But 90 pct of the fair amount of blast furnace and openhearth scrap sold in the southeast is going north.

**Cincinnati**—Mills here report inventories continue ample. Prices hold at ceiling. Local dealers are having difficulty rounding up freight cars to maintain shipping tempo. Any and all cars they can lay their hands on are being pressed into service, including cars "foreign" to railroads serving the district. Industrial scrap is more plentiful, but a check of dealers within a 100-mile radius indicates yards are relatively bare of material.

**Buffalo**—Although tonnages are still limited, dealers report no trouble in obtaining new orders from mills. Scrap is moving in substantial quantities here. Talk of a possible easement in prices is confined to the \$2 to \$3 dip from ceiling levels in the cast market. Helping to swell mills' stockpiles are heavy shipments from upper Lake ports and from Eastern Seaboard.

**Boston**—Scrap market in the New England district was quiet this week. Steelmaking grades were going at a "just fair" pace with some business being transacted but not, in the volume that prevailed earlier.

**West Coast**—Rumors persist in San Francisco and Seattle that scrap dealers are seeking export licenses to ship scrap to Japan. In the San Francisco and Los Angeles areas mills are working on solid inventories although dealer intake has dropped off to about half of normal. A push to ceiling prices is expected. Seattle scrap moves well but mills have about a 60-day inventory average on No. 1 and No. 2 heavy melting.

# SCRAP PRESCRIPTIONS EXPERTLY FILLED

*Compounding Scrap Prescriptions  
for Mills & Foundries Since 1889*

Regardless of your scrap need, and individual specifications, Luria Brothers and Company, Inc. have the background, knowledge, organization and will to solve your problem competently . . . assuring the maximum production at the lowest cost.

Our offices, strategically located at the very fingertips of the steel industry, are ready to assume your every iron and steel scrap problem.



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SEATTLE, WASH.

## LEADERS IN IRON AND STEEL SCRAP SINCE 1889

October 2, 1952

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## Scrap Prices

## Iron and Steel

## SCRAP PRICES

(Maximum basing point prices, per gross ton, as set by OPS in CPR 5 and amendments.)

		Switching Charge (Dollars per gross ton) →															
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh
		\$0.98	\$0.75	\$0.53	\$0.65	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70	\$0.75	\$0.51	\$0.75	\$0.70
		Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	Pittsburgh	P

## Cast Scrap Ceilings

### Prices set by CPR 5, OPS

(F.o.b. all shipping points)

Grades	OPS No.	
Cupola cast	1	\$49.00
Charging box cast	2	47.00
Heavy breakable cast	3	46.00
Cast iron brake shoes	5	41.00
Stove plate	6	46.00
Clean auto cast	7	52.00
Unstripped motor blocks	8	43.00
Cast iron carwheels	9	47.00
Malleable	10	55.00
Drop broken mach'y cast	11	52.00

Ceiling price of clean cast iron foundry  
 runout or prepared cupola drops is 75  
 pct of corresponding grade.

### Under Ceiling Scrap Prices

## Pittsburgh

Machine shop turnings .. . . .	\$32.00
Mixed borings, turnings.. . . .	32.00
Cast iron borings .. . . .	\$35.00 to 35.50
No. 1 machinery cast .. . . .	52.00
Heavy breakable cast .. . . .	45.00
Malleable .. . . .	55.00

## Chicago

Low phos. forge crops	\$50.00 to \$51.00
Low phos. 3 ft and under	44.00 to 45.00
Machine shop turnings	30.00 to 31.50
Mixed borings, turnings	34.00 to 35.50
Shoveling turnings	34.00 to 35.00
Cast iron borings	34.00 to 35.50
No. 1 machinery cast	48.00 to 49.00
Cupola cast	46.00 to 46.00
Heavy breakable cast	41.00 to 42.00
Malleable	53.00 to 55.00
Stove plate	42.00 to 43.00
Clean auto cast	48.00 to 50.00
Charging box cast	44.00 to 45.00
Drop broken mach'y	48.50 to 50.00
Unstripped motor blocks	38.00 to 39.00

### Philadelphia Area

Clean cast chem. borings..	\$36.50 to \$37.00
Cupola cast .....	47.00 to 48.00
Unstripped motor blocks..	41.00 to 42.00
Charging box cast .....	45.00 to 46.00

## Cleveland

Cast iron borings	.....	\$34.00 to \$34.50
Stove plate	.....	45.00 to 46.00
Malleable	.....	54.00 to 55.00

## Youngstown

Cast iron borings .....\$35.00 to \$35.50

## Buffalo

No. 1 machinery cast . . .	\$49.00 to \$50.00
No. 1 cupola cast . . . . .	46.00 to 47.00

## Birmingham

Shovelling turnings .....	\$30.00 to \$32.00
Cast iron borings .....	30.00 to 32.00
No. 1 cupola cast .....	46.00 to 47.00
Stove plate .....	41.00 to 42.00
Charging box cast .....	39.00 to 40.00
Heavy breakable .....	37.00 to 38.00
Drop broken machinery .....	44.00 to 45.00
Unstripped motor blocks .....	37.00 to 38.00

## New York

Brokers' Buying prices per gross ton, on cars:

Clean cast chem. borings	\$30.00 to \$30.50
No. 1 machinery cast	48.00 to 50.00
Mixed yard cast	43.00 to 44.00
Charging box cast	43.00 to 44.00
Heavy breakable cast	44.00 to 45.00
Unstripped motor blocks	36.00 to 37.00

## Boston

Brokers' Buying prices per gross ton, on cars:

Machine shop turnings	\$22.17 to \$24.17
Short shoveling turnings	26.17 to 28.17
Mixed cupola cast	39.00 to 40.00
Heavy breakable cast	39.00 to 40.00
Stove plate	38.00 to 39.00
Unstripped motor blocks	32.25

## Detroit

**Brokers' Buying prices per gross ton, on cars:**

No. 1 cupola cast .....	\$48.00
Heavy breakable cast ...	\$43.00 to 44.00
Stove plate .....	43.00 to 44.00
Cast iron brake shoes ...	39.00 to 40.00

## Cincinnati

Drop broken cast . . . . . \$51.00 to \$52.00

## St. Louis

Unstripped motor blocks . . . . .	\$38.00
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## San Francisco

No. 2 heavy melting	.....	\$31.00
No. 2 bundles	.....	29.00
Machine shop turnings	.....	17.00
No. 1 cupola cast	.....	45.00

## Los Angeles

No. 2 heavy melting .....	\$31.00
No. 2 bundles .....	29.00
Machine shop turnings ..	17.00
Shoveling turnings .....	20.00
No. 1 cupola cast .....	50.00

## Seattle

No. 2 bundles . . . . .	\$29.00
No. 1 cupola cast . . . . .	40.50
Heavy breakable . . . . .	35.50

**Hamilton, Ont.**

No. 1 hvy. melting	\$35.50
No. 1 bundles	35.50
No. 2 bundles	35.00
Mechanical bundles	33.50
Mixed steel scrap	31.50
Mixed borings, turnings	32.50
Rails, remelting	35.50
Rails, rerolling	44.00
Bushelings	30.50
Bush, new fact. prep'd	33.50
Bush, new fact. unprep'd	32.50
Short steel turnings	32.50
Cast scrap	50.00

Pittsburg, Cal...  
Portland, Ore...  
San Francisco  
Seattle

\$35.00  
35.00  
34.00  
34.00  
34.00  
25.00  
29.00  
29.00  
29.00  
32.00  
42.50  
40.00  
37.50  
37.00  
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42.00  
43.00  
45.00  
44.00  
39.00  
42.00  
40.00  
42.00  
42.00  
42.00  
42.00  
31.00

ON CARS:  
\$48.00  
44.00  
44.00  
40.00

\$52.00

\$38.00

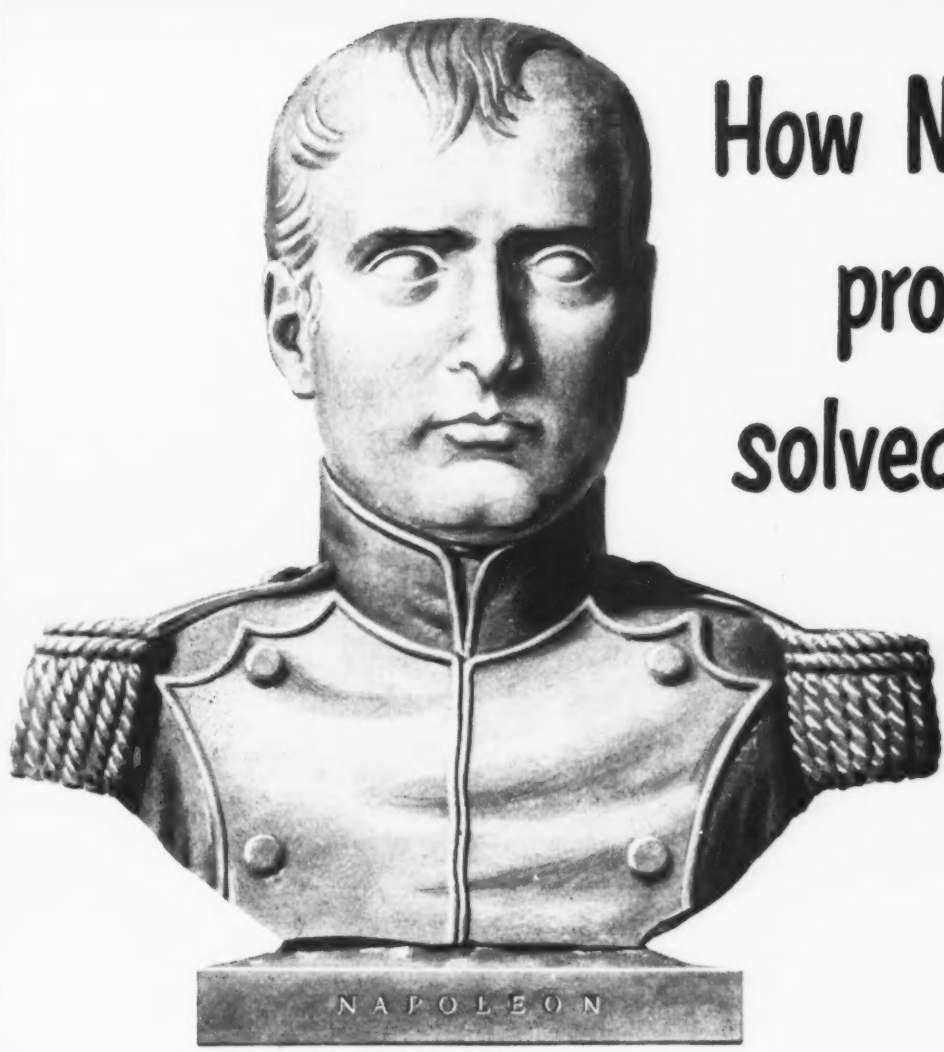
\$31.00  
29.00  
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\$31.00  
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32.50  
32.50  
50.00

1952



# How Napoleon's problem solved yours

WHEN Napoleon offered a prize for the best way to feed his fighting armies—the first airtight container was born.

Today, a century and half later, this container has evolved into the familiar “tin can”—the end product of multi-billion-dollar industries, employing hundreds of thousands of people.

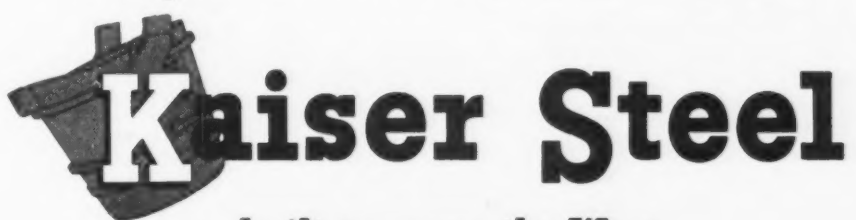
For all of us, the tin can has cut our work and improved our health by providing us with a balanced, nutritious diet throughout the year.

It permits us to enjoy the delicacies of many lands. It feeds our armed forces throughout the world.

In countless ways, the versatile can is an essential part of convenient, modern living—thanks to the continuing research and ingenuity of can manufacturers and the canning industry.

**Kaiser Steel is proud to serve this great industry . . . through the production of tin plate at its new mill in Fontana.**

*It's good business to do business with*



*built to serve the West*

**PROMPT, DEPENDABLE DELIVERY AT COMPETITIVE PRICES • plates • continuous weld pipe • electric weld pipe • tin plate • hot rolled strip • hot rolled sheet alloy bars • carbon bars • structural shapes • cold rolled strip • special bar sections • semi-finished steels • pig iron • coke oven by-products**  
For details and specifications, write: **KAISER STEEL CORPORATION, LOS ANGELES, OAKLAND, SEATTLE, PORTLAND, HOUSTON, TULSA, NEW YORK**

October 2, 1952

## Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Sept. 30 1952	Sept. 23 1952	Sept. 2 1952	Oct. 2 1951
<b>Flat-Rolled Steel: (per pound)</b>				
Hot-rolled sheets	2.775¢	2.775¢	2.775¢	3.60¢
Cold-rolled sheets	4.575	4.575	4.575	4.35
Galvanized sheets (10 ga.)	5.075	5.075	5.075	4.80
Hot-rolled strip	3.725	3.725	3.725	3.50
Cold-rolled strip	5.20	5.20	5.20	4.75
Plate	3.90	3.90	3.90	3.70
Plates wrought iron	9.00	9.00	9.00	7.85
Strains C-R strip (No. 302)	36.75†	36.75†	36.75†	36.75
<b>Tin and Terneplate: (per base box)</b>				
Tinplate (1.50 lb.) cokes	\$8.95	\$8.95	\$8.95	\$8.70
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.40
Special coated mfg. ternes	7.75	7.75	7.75	7.50
<b>Bars and shapes: (per pound)</b>				
Merchant bars	3.95¢	3.95¢	3.95¢	3.70¢
Cold finished bars	4.925	4.925	4.925	4.55
Alloy bars	4.675	4.675	4.675	4.30
Structural shapes	3.85	3.85	3.85	3.65
Stainless bars (No. 302)	31.50†	31.50†	31.50†	31.50
Wrought iron bars	10.05	10.05	10.05	9.50
<b>Wire: (per pound)</b>				
Bright wire	5.225¢	5.225¢	5.225¢	4.85¢
<b>Rails: (per 100 lb)</b>				
Heavy rails	\$3.775	\$3.775	\$3.775	\$3.60
Light rails	4.25	4.25	4.25	4.00
<b>Semifinished Steel: (per net ton)</b>				
Re-rolling billets	\$59.00	\$59.00	\$59.00	\$56.00
Slabs re-rolling	59.00	59.00	59.00	56.00
Forging billets	70.50	70.50	70.50	66.00
Alloy blooms, billets, slabs	76.00	76.00	76.00	70.00
<b>Wire Rod and Skelp: (per pound)</b>				
Wire rods	4.325¢	4.325¢	4.325¢	4.10¢
Skelp	3.55	3.55	3.55	3.35

† Add 4.7 pct.

**Composite: (per pound)**

Finished steel base price 4.376¢ 4.376¢ 4.376¢ 4.131¢

	Sept. 30 1952	Sept. 23 1952	Sept. 2 1952	Oct. 2 1951
<b>Pig Iron: (per gross ton)</b>				
Foundry, del'd Phila.	\$60.69	\$60.69	\$60.69*	\$57.77
Foundry, Valley	55.00	55.00	55.00*	52.50
Foundry, Southern, Cin'ti	58.93	58.93	58.93*	55.58
Foundry, Birmingham	51.38	51.38	51.38*	48.88
Foundry, Chicago†	55.00	55.00	55.00*	52.50
Basic, del'd Philadelphia	59.77	59.77	59.77*	56.92
Basic, Valley furnace	54.50	54.50	54.50*	52.00
Malleable, Chicago†	55.00	55.00	55.00*	52.50
Malleable, Valley	55.00	55.00	55.00*	52.50
Charcoal, Chicago	78.34	78.34	78.34*	70.56
Ferromanganese	226.25	226.25	226.25	186.25

† The switching charges for delivery to foundries in the Chicago district is \$1 per ton.

‡ Average of U. S. prices quoted on Ferroalloy pages.

**Composite: (per gross ton)**

Pig iron \$55.26 \$55.26 \$55.26\* \$52.69

\* Pig iron price increase retroactive to July 26, 1952.

**Scrap: (per gross ton)**

No. 1 steel, Pittsburgh	\$43.00*	\$43.00*	\$43.00*	\$44.00*
No. 1 steel, Phila. area	41.50*	41.50*	41.50*	42.50*
No. 1 steel, Chicago	41.50*	41.50*	41.50*	42.50*
No. 1 bundles, Detroit	41.15*	41.15*	41.15*	41.15*
Low phos., Youngstown	46.50*	46.50*	46.50*	46.50*
No. 1 cast, Pittsburgh	49.00†	49.00†	49.00†	49.00†
No. 1 cast, Philadelphia	47.50	47.50	47.50	49.00†
No. 1 cast, Chicago	45.50	45.50	45.50	49.00†

\* Basing pt., less broker's fee. † Shipping pt., less broker's fee.

**Composite: (per gross ton)**

No. 1 heavy melting scrap \$42.00 \$42.00 \$42.00 \$43.00

**Coke, Connellsville: (per net ton at oven)**

Furnace coke, prompt	\$14.75	\$14.75	\$14.75	\$14.75
Foundry coke, prompt	17.75	17.75	17.75	17.75

**Nonferrous Metals: (cents per pound to large buyers)**

Copper, electrolytic, Conn.	24.50	24.50	24.50	24.50
Copper, Lake, Conn.	24.625	24.625	24.625	24.625
Tin, Straits, New York	\$1.21½	\$1.21½*	\$1.21½	\$1.03
Zinc, East St. Louis	13.75	13.75*	14.00	19.50
Lead, St. Louis	15.80	15.80	15.80	18.80
Aluminum, virgin ingot	20.00	20.00	20.00	19.00
Nickel, electrolytic	59.58	59.58	59.58	59.58
Magnesium, ingot	24.50	24.50	24.50	24.50
Antimony, Laredo, Tex.	39.00	39.00	39.00	42.00

\* Revised

## Composite Price Notes

### Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

### Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

### Scrap Steel Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

## Warehouse Price Notes

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

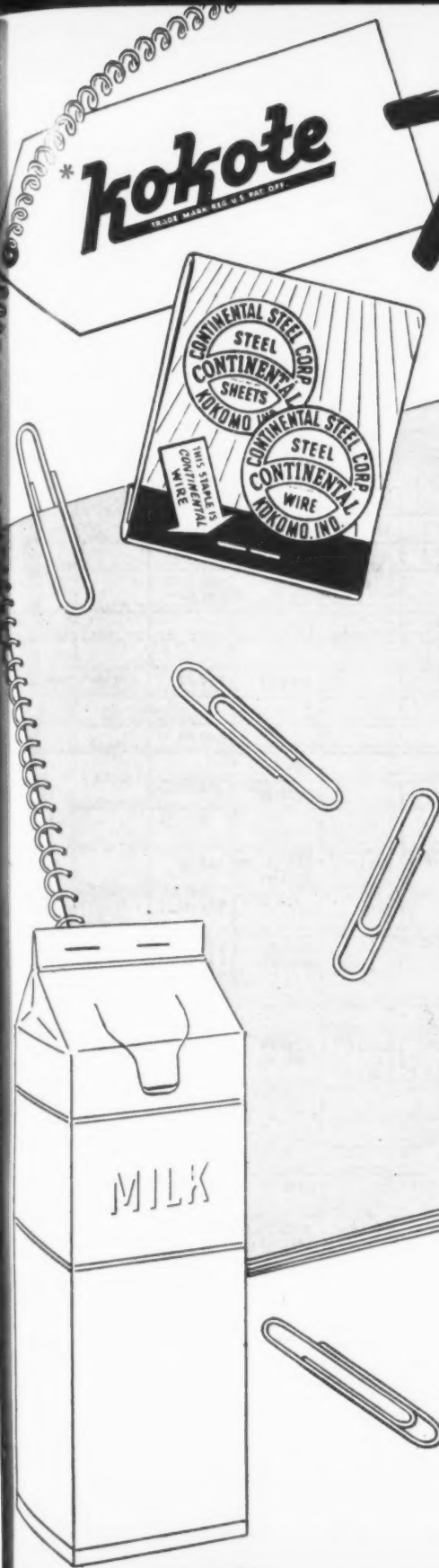
Exceptions: (1) 500 to 1499 lb, (2) 1500 to 3499 lb, (3) 6000 lb or over, (4) 450 to 1499 lb.

## WARE HOUSES

Base price, f.o.b., dollars per 100 lb.

Cities	City Delivery Charge	Sheets		Strip		Plates Shapes		Bars		Alloy Bars			
		Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled	Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled A 4015 As rolled	Hot-Rolled A 4140 Annealed	Cold-Drawn A 4015 As rolled	Cold-Drawn A 4140 Annealed
Baltimore	\$.20	5.81	7.17	8.42	6.42	6.30	6.47	6.41	7.18				
Birmingham	.15	5.80	6.65	7.70 <sup>1</sup>	5.80	6.47	5.95	5.80	7.43				
Boston	.20	6.48	7.35	8.59	6.55	8.50 <sup>1</sup>	6.75	6.56	8.40	10.78	11.15		13.18
Buffalo	.20	6.52	7.52	8.74		6.80	6.75	6.42	7.54	11.18			
Chicago	.20	5.76	6.60	8.40	6.16	6.26	5.96	5.76	6.90	10.70	11.00	12.70	12.51
		5.80	6.65	8.46	6.21	6.37	6.08	5.90	6.95	11.07			14.42
		5.80	6.65	8.05	5.83	5.95	5.95	5.83	6.95	10.65			12.66
		5.81		5.84		6.00		6.92					
Cincinnati	.15	6.13	6.72	8.52	6.13	6.47	6.42	6.13	7.16	11.07			13.97
Cleveland	.20	5.80	6.65	8.16	6.00	6.12	6.28	5.89	6.66		10.79		12.79
		5.81		8.19	6.01	6.22	6.33	6.98					
Denver		7.17			7.43	8.90	7.37	7.50	8.24				
					7.69		7.80	7.71					
Detroit	.20	6.00	6.81	8.34	6.13	7.99	6.45	6.12	6.975	10.72	10.92	12.72	13.02
		6.07	6.92		6.47		6.45	6.30	7.21				
Houston	.20	6.74	7.78	8.68	6.61	9.80	6.63	6.66	8.82	11.90	11.90		13.90
		6.79	7.79		6.75		7.07	6.98	9.62				
Indianapolis del'd													
Kansas City	.20	6.47	7.31	8.50	6.51	8.07	6.62	6.62	6.50	11.15	11.45	13.13	13.43
				8.72			6.67			11.90	12.20	13.83	14.18
Los Angeles	.20	6.60	8.45	9.80	6.74	9.15	6.66	6.60	8.36		12.05		14.60
			8.49	10.55	6.78		6.71	6.64	8.69				
Memphis	.10												
Milwaukee	.20	5.97	6.82	8.02	6.00		6.12	6.12	6.00		10.82		12.82
		5.98			6.01		6.17		7.07				
New Orleans	.15	6.28	7.12		6.32		6.43	6.43	6.31				
									7.85				
New York	.30	6.26	7.27	8.31 <sup>3</sup>	6.56	9.53	6.60	6.39	6.59	10.74	11.04	12.74	13.04
		6.62	7.60	8.68	6.72		7.18	6.79	8.95				
Norfolk	.20	7.10			6.81		6.64	7.25	6.44	8.45			
Philadelphia	.25	6.11	7.13	8.35	6.45		6.24	6.17	6.42	10.57	10.79		12.79
		6.38	7.92	8.79	7.45		6.84	6.42	6.68		11.02		
Pittsburgh	.20	5.80	6.65	8.45	5.94		5.95	5.95	5.83		10.65		12.65
		5.81		8.45	5.97		6.00		6.90				
Portland	.20	7.60	9.00	9.70	7.60		7.05	7.30	7.35	9.46			
		7.90			7.65								
Salt Lake City	.20	8.30		10.90 <sup>4</sup>	8.45		7.85	8.00	8.40				
San Francisco	.15	6.80	8.23	9.70	6.79	9.25	7.10	6.79	6.65		11.85		14.40
		6.90		10.05	6.80	9.70		6.90	6.70				
Seattle	.20	7.43	8.46	9.55	7.40		7.19	6.83	7.40	9.31			
St. Louis	.20	6.10	6.95	8.35	6.14	9.73	6.35	6.35	6.13	6.96	10.65	10.95	12.65
		6.30	7.83	8.39			6.60	6.33	7.40				
St. Paul	.15	6.47	7.31	8.71	6.50		6.61	6.61	6.49	7.32			

Oct. 2  
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12.65  
14.40  
12.95  
952



# Tough to Match...

## IN ANY WIRE-BUYER'S BOOK

● Kokote just can't be beat . . . when it comes to brightness. It's a wire that's "different" from furnace to finish. Bright and lustrous as polished silver, Continental Kokote lends its chrome-like lustre to a wide variety of finished products. Our customers use it for spiral bindings, paper clips, match book staples and on milk cartons. There are a host of other uses for this flexible bright wire. And with Kokote, as with any Continental wire, users get Continental follow-through wire service. It's a basic Continental policy that the wire must be right for your particular product application—or it's made right. Write Continental at Kokomo, Indiana.

Trade Marks Reg. U.S. Pat. Off.



# CONTINENTAL STEEL CORPORATION

GENERAL OFFICES • KOKOMO, INDIANA

PRODUCERS OF Manufacturer's Wire in many sizes, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, ALSO, Coated and Uncoated Steel Sheets, Nails, and tempers and finishes, including Galvanized, Liquor Finished, Bright, Lead Coated, and special wire, Continental Chain Link Fence, and other products.

## IRON AGE

*Italicized identify producers listed in key at end of table. Base prices, f.o.b. mill in cents per lb., unless otherwise noted. Extras apply.*

STEEL  
PRICES

	INGOTS		BILLETS, BLOOMS, SLABS			PIPE SKELP	PIL- ING	SHAPES STRUCTURALS		STRIP			
	Carbon Forging Net Ton	Alloy Net Ton	Carbon Re-rolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Sheet Steel	Carbon	Hi Str. Low Alloy	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy
EAST	Bethlehem Pa.				\$76.00 B3			3.90 B3	5.80 B3				
	Buffalo, N. Y.		\$59.00 B3	\$70.50 B3 R3	\$76.00 B3 R1		4.675 B3	3.90 B3	5.80 B3	3.725 B3, R3	5.10 B3	5.70 B3	7.90 B3
	Claymont Del.												
	Coatesville Pa.												
	Conschocken Pa.			\$77.50 A2	\$83.00 A2					4.125 A2		5.90 A2	
	Harrisburg Pa.												
	Hartford Conn.												
	Johnstown Pa.		\$59.00 B3	\$70.50 B3	\$76.00 B3			3.90 B3	5.80 B3	3.725 B3			
	Newark N. J.												
	New Haven Conn.										5.60 A5 5.85 D1		
	Phoenixville Pa.							6.10 P2					
	Putnam Conn.												
	Sparrows Pt. Md.									3.725 B3	5.10 B3	5.70 B3	7.90 B3
	Worcester Mass.												
	Trenton N. J.										6.45 R4		
MIDDLE WEST	Alton, Ill.									4.20 L1			
	Ashland, Ky.									3.725 A7			
	Gaston-Massillon, Ohio			\$70.50 R3	\$76.00 R3 \$78.60 T5								
	Chicago, Sterling, Ill.		\$59.00 U1	\$70.50 U1, R3, W8	\$76.00 U1, R3, W8		4.675 U1	3.85 U1, W8	5.80 U1	3.725 A1, W8 4.725 N4	5.35 A1		
	Cleveland, Ohio			\$70.50 R3							5.10 A5, J3		7.45 J3
	Detroit, Mich.	\$56.00 R5	\$57.00 R5	\$73.50 R5	\$79.00 R5					4.025 G3 4.40 M2	5.30 G3 5.45 M2 5.60 D1 6.05 D2	6.30 G3	8.15 G3
	Duluth, Minn.												
	Gary, Ind. Harbor, Indiana		\$59.00 U1	\$70.50 U1	\$76.00 U1, Y1		4.675 J3	3.85 J3, U1	5.80 J3, U1 6.30 Y1	3.725 J3, U1, Y1	5.35 J3	5.65 J3, U1 6.15 Y1	
	Granite City, Ill.												
	Kokomo, Ind.										5.10 A7		
	Middletown, Ohio												
	Niles, Ohio Sharon, Pa.									4.225 S1	5.80 S1	5.65 S1	7.30 S1
	Pittsburgh, Pa.	\$54.00 U1	\$57.00 U1	\$59.00 U1, J3	\$70.50 U1, J3	\$76.00 U1	3.55 U1 3.65 J3	4.675 U1	3.85 U1, J3	5.80 U1, J3	3.725 J3, A7 3.975 A3 4.225 S7	5.10 J3, A7 5.45 A3 5.80 B4, S7	
	Portsmouth, Ohio												
	Weirton, Wheeling, Follansbee, W. Va.							4.10 W3		3.825 W3	5.10 W3	6.10 W3	7.95 W3
	Youngstown, Ohio				\$76.00 Y1, C10	3.55 U1, R3			6.30 Y1	3.725 U1, Y1, R3	5.10 R3, Y1 5.70 C5 5.80 B4	5.65 R3, U1 6.15 Y1	7.30 R3 7.80 Y1
WEST	Fontana, Cal.	\$81.00 K1	\$83.00 K1	\$78.00 K1	\$89.50 K1	\$95.00 K1		4.45 K1	6.40 K1	4.975 K1	6.75 K1	6.55 K1	
	Genoa, Utah				\$70.50 C7			3.85 C7	5.80 C7				
	Kansas City, Mo.							4.45 S2		4.325 S2			
	Los Angeles, Torrance, Cal.				\$89.50 B2	\$96.00 B2		4.45 C7, B2	6.35 B2	4.475 C7, B2	6.85 C1	6.40 B2	
	Minneapolis, Colo.							4.30 C6		4.775 C6			
	San Francisco, Niles, Pittsburg, Cal.				\$89.50 B2			4.40 B2 4.56 P9	6.30 B2	4.475 C7, B2		6.40 B2	
	Seattle, Wash.				\$89.50 B2			4.50 B2	6.40 B2	4.725 B2		6.65 B2	
	Atlanta, Ga.									4.275 A8			
SOUTH	Birmingham, Ala. Alabama City, Ala.			\$59.00 T2	\$70.50 T2			3.85 T2, R3	5.80 T2	3.725 T2, R3			
	Houston, Texas		\$65.00 S2		\$78.50 S2	\$84.00 S2		4.25 S2		4.125 S2			

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

IRON AGE

# STEEL PRICES

SHEETS										WIRE ROD	TINPLATE†		BLACK PLATE	STEEL PRICES
Hi Str. C.R. Low Alloy	Hot-rolled 18 ga. h by 7'	Cold- rolled	Galvanized 10 ga.	Enameling 12 ga.	Long Terns 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot- rolled 19 ga.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Hollowware Enameling 29 ga.	
														Bethlehem, Pa.
7.90 B3	3.775 B3	4.575 B3				5.675 B3	6.925 B3							Buffalo, N. Y.
														Claymont, Del.
														Contosville, Pa.
	4.175 A2					5.925 A2								Conshohocken, Pa.
														Harrisburg, Pa.
														Hartford, Conn.
									4.325 B3					Johnstown, Pa.
														Newark, N. J.
														New Haven, Conn.
														Phoenixville, Pa.
														Putnam, Conn.
7.90 B3	3.775 B3	4.575 B3	5.075 B3			5.675 B3	6.925 B3	7.775 B3	4.425 B3	\$8.80 B3	\$7.50 B3			Sparrows Pt., Md.
									4.625 A5					Worcester, Mass.
									4.425 R4					Tranton, N. J.
									4.70 L1					Alton, Ill.
	3.775 A7		5.075 A7	4.925 A7										Ashland, Ky.
			5.075 R3											Canton-Massillon, Ohio
	3.775 W3					5.675 U1			4.325 A5, N4 R3					Chicago, Sterling, Ill.
7.45 J3	3.775 R3, J3	4.575 R3, J3		4.925 R3		5.675 R3, J3	6.925 R3, J3		4.325 A5					Cleveland, Ohio
8.15 G3	3.775 G3	4.775 G3				6.225 G3	7.475 G3							Detroit, Mich.
														Duluth, Minn.
	3.775 J3, U1, Y1	4.575 J3, U1, Y1	5.075 J3, U1	4.925 U1	5.475 U1	5.675 J3, U1 6.175 Y1	6.925 J3, U1 7.425 Y1		4.325 Y1	\$8.70 U1, J3, Y1	\$7.40 U1, J3	6.10 U1, Y1		Gary, Ind. Harbor, Indiana
	4.30 G2	5.275 G2	5.50 G2	5.625 G2							\$7.60 G2	6.30 G2		Granite City, Ill.
			5.475 C9											Kokomo, Ind.
		4.575 A7		4.925 A7	5.475 A7									Middletown, Ohio
7.30 S1	4.175 S1					5.675 S1					\$7.40 R3			Niles, Ohio Sharon, Pa.
	3.775 U1, J3, A7 3.925 A3	4.575 U1, J3, A7	5.075 U1	4.925 U1		5.675 U1, J3	6.925 U1, J3	7.625 U1	4.325 A5	\$8.70 U1, J3	\$7.40 U1, J3	6.10 U1		Pittsburgh, Pa.
									4.525 P7					Portsmouth, Ohio
7.95 W3	3.775 W3, W5	4.575 W3, W5	5.075 W3, W5		5.475 W3, W5	6.025 W3	7.275 W3			\$8.70 W3, W5	\$7.40 W3, W5	6.35 W5		Woriton, Wheeling, Follanshee, W. Va.
7.30 R3 7.80 Y1	3.775 U1, R3, Y1	4.575 R3, Y1	5.775 R1	4.925 Y1	6.05 E2	5.675 R3, U1 6.175 Y1	6.925 R3 7.425 Y1	5.65 E2 5.825 R1	4.325 Y1	\$8.70 R3				Youngstown, Ohio
	4.725 K1	5.525 K1				6.625 K1	7.875 K1		5.125 K1					Footana, Cal.
	3.875 C7													Genova, Utah
														Kansas City, Mo.
	4.075 C7		5.825 C7					5.575 C7	5.125 C7, B2					Los Angeles, Torrance, Cal.
									4.575 C6					Minnequa, Colo.
	4.075 C7	5.525 C7	5.825 C7						4.975 C7	\$9.45 C7	\$8.15 C7			San Francisco, Niles, Pittsburg, Cal.
														Seattle, Wash.
														Atlanta, Ga.
	3.775 T2, R3	4.575 T2	5.075 T2, R3			5.675 T2		4.925 R3	4.325 T2, R3	\$8.80 T2	\$7.50 T2			Birmingham, Ala. Alabama City, Ala.
									4.725 S2					Houston, Tex.

## IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

STEEL  
PRICES

STEEL PRICES		BARS					PLATES				WIRE	
		Carbon Steel	Reinfore- ing	Cold Finished	Alloy Hot- rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfg's. Bright
EAST	Bethlehem, Pa.				4.675 B3	6.00 B3	5.925 B3					
	Buffalo, N. Y.	3.95 B3, R3	3.95 B3, R3	4.975 B5	4.675 B3, R3	6.00 B3, B5	5.925 B3	3.90 B3			5.95 B3	
	Claymont, Del.							4.35 C4		5.35 C4		
	Coatesville, Pa.							4.35 L4		5.75 L4		
	Conschocken, Pa.							4.35 A2	4.95 A2		6.20 A2	
	Harrisburg, Pa.							6.50 C3	6.50 C3			
	Hartford, Conn.			5.475 R3		6.45 R3						
	Johnstown, Pa.	3.95 B3	3.95 B3		4.675 B3		5.925 B3	3.90 B3		5.25 B3	5.95 B3	5.225 B3
	Newark, N. J.			5.375 W10		6.35 W10						
	New Haven, Conn.											
	Phoenixville, Pa.											
	Putnam, Conn.			5.475 W10								
	Sparrows Point, Md.		3.95 B3					3.90 B3		5.25 B3	5.95 B3	5.325 B3
	Worcester, Mass.					6.35 A5						5.525 A5
	Trenton, N. J.											
MIDDLE WEST	Alton, Ill.	4.50 L1										5.45 L1
	Ashland, Ky.							3.90 A7				
	Canton-Massillon	3.95 R3		4.925 R2, R3	4.675 R3 4.72 T5	5.99 T5 6.00 R2, R3						
	Chicago, Sterling, Ill.	3.95 U, W8, R3 4.55 N4	3.95 R3 4.70 N4	4.925 A5, B5 W8, W10	4.675 R3, U1, W8	6.00 B5, L2, R3, W8, W10 6.05 A5		3.90 U1, W8	4.95 U1	5.25 U1	5.95 U1	5.225 A5, N4, R3 5.325 K2 5.475 W7
	Cleveland, Ohio	3.95 R3	3.95 R3	4.925 A5, C13		6.00 C13 6.05 A5	5.925 R3	3.90 R3, J3	4.95 J3		5.95 R3, J3	5.225 A5, C13, R3
	Detroit, Mich.	4.10 R5 4.30 G3		5.075 R5, P8 5.175 P3	4.825 R5 5.025 G3	6.15 R5, P8 6.20 P3	6.675 G3	4.45 G3			6.90 G3	
	Duluth, Minn.											5.225 A5
	Gary Ind. Harbor, Indiana	3.95 J3, U1, Y1	3.95 J3, U1, Y1	4.925 L2, M5, R3	4.675 J3, U1, Y1	6.00 L2, M5, R3, R5	5.925 J3, U1, 6.425 Y1	3.90 J3, U1, Y1	4.95 J3	5.25 U1	5.95 J3, U1 6.45 Y1	5.325 M4
	Granite City, Ill.							4.80 G2				
	Kokomo, Ind.											5.325 C9
	Middletown, Ohio											
	Niles, Ohio Sharon, Pa.							4.15 S1		5.70 S1	5.95 S1	
	Pittsburgh, Pa.	3.95 U1, J3	3.95 U1, J3	4.925 A5, J3, W10, R3, C8	4.675 U1, J3	6.00 W10, C8 6.05 A5	5.925 U1, J3	3.90 U1, J3	4.85 U1, J3	5.25 U1, J3	5.95 U1, J3	5.225 A5, J3
	Portsmouth, Ohio											5.625 P7
	Weirton, Wheeling, Follansbee, W. Va.	4.10 W3						3.90 W5 4.20 W3				
Youngstown, Ohio	3.95 U1, Y1, R3	3.95 U1, Y1, R3	4.925 Y1	4.675 U1, C10, Y1	6.00 C10, Y1	5.925 U1 6.425 Y1	3.90 U1, Y1, R3			5.95 R3 6.45 Y1	5.225 Y1	
WEST	Fontana, Cal.	4.65 K1	4.65 K1		5.725 K1		6.975 K1	4.50 K1		6.20 K1	6.55 K1	
	Geneva, Utah							3.90 C7			5.95 C7	
	Kansas City, Mo.	4.55 S2	4.55 S2		5.275 S2							5.825 S2
	Los Angeles, Torrance, Cal.	4.65 C7, B2	4.65 C7, B2	6.375 R3	5.725 B2		6.625 B2					6.175 C7, B3
	Minnequa, Colo.	4.40 C6	4.75 C6					4.70 C6				5.475 C6
	San Francisco, Niles, Pittsburg, Cal.	4.65 C7, P9 4.70 B2	4.65 C7, P9 4.70 B2				6.675 B2					6.175 C6, C7
	Seattle, Wash.	4.70 B2	4.70 B2				6.675 B2	4.80 B2			6.85 B2	
	Atlanta, Ga.	4.50 A8	4.50 A8									5.475 A8
	Birmingham, Ala. Alabama City, Ala.	3.95 T2, R3	3.95 T2, R3				5.925 T2	3.90 T2 R3			5.95 T2	5.225 T2, R3
	Houston, Tex.	4.35 S2	4.35 S2		5.075 S2			4.30 S2				5.625 S2

Turn Page

## Key to Steel Producers With Principal Offices

1	Acme Steel Co., Chicago
2	Alan Wood Steel Co., Conshohocken, Pa.
3	Allegheny Ludlum Steel Corp., Pittsburgh
4	American Cladmetals Co., Carnegie, Pa.
5	American Steel & Wire Div., Cleveland
6	Angell Nail & Chaplet Co., Cleveland
7	Armco Steel Corp., Middletown, O.
8	Atlantic Steel Co., Atlanta, Ga.
9	Babcock & Wilcox Tube Co., Beaver Falls, Pa.
10	Bethlehem Pacific Coast Steel Corp., San Francisco
11	Bethlehem Steel Co., Bethlehem, Pa.
12	Blair Strip Steel Co., New Castle, Pa.
13	Bliss & Laughlin Inc., Harvey, Ill.
14	Calatrigo Steel Corp., Los Angeles
15	Carpenter Steel Co., Reading, Pa.
16	Central Iron & Steel Co., Harrisburg, Pa.
17	Claymont Products Dept., Claymont, Del.
18	Cold Metal Products Co., Youngstown
19	Colorado Fuel & Iron Corp., Denver
20	Columbia-Geneva Steel Div., San Francisco
21	Columbia Steel & Shifting Co., Pittsburgh
22	Continental Steel Corp., Kokomo, Ind.
23	Copperweld Steel Co., Glassport, Pa.
24	Crucible Steel Co. of America, New York
25	Cumberland Steel Co., Cumberland, Md.
26	Cuyahoga Steel & Wire Co., Cleveland
27	Detroit Steel Corp., Detroit
28	Detroit Tube & Steel Div., Detroit
29	Driver Harris Co., Harrison, N. J.
30	Eastern Stainless Steel Corp., Baltimore
31	Empire Steel Co., Mansfield, O.
32	Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
33	Fitzsimmons Steel Corp., Youngstown
34	Follansbee Steel Corp., Follansbee, W. Va.
35	Globe Iron Co., Jackson, O.
36	Granite City Steel Co., Granite City, Ill.
37	Great Lakes Steel Corp., Detroit
38	Hanna Furnace Corp., Detroit
39	Ingersoll Steel Div., Chicago
40	Inland Steel Co., Chicago
41	Interlake Iron Corp., Cleveland
42	Jackson Iron & Steel Co., Jackson, O.
43	Jesse Steel Corp., Washington, Pa.
44	Jones & Laughlin Steel Corp., Pittsburgh
45	Joelyn Mfg. & Supply Co., Chicago
46	Kaiser Steel Corp., Fontana, Cal.
47	Keystone Steel & Wire Co., Peoria
48	Koppers Co., Granite City, Ill.
49	Laclede Steel Co., St. Louis
50	La Salle Steel Co., Chicago
51	Lone Star Steel Co., Dallas
52	Lukens Steel Co., Coatesville, Pa.
53	Mahoning Valley Steel Co., Niles, O.
54	McLouth Steel Corp., Detroit
55	Mercer Tube & Mfg. Co., Sharon, Pa.
56	Mid-States Steel & Wire Co., Crawfordsville, Ind.
57	Monarch Steel Co., Inc., Hammond, Ind.
58	Mystic Iron Works, Everett, Mass.
59	National Supply Co., Pittsburgh
60	National Tube Co., Pittsburgh
61	Niles Rolling Mills Co., Niles, O.
62	Northwestern Steel & Wire Co., Sterling, Ill.
63	Oliver Iron & Steel Co., Pittsburgh
64	Page Steel & Wire Div., Monessen, Pa.
65	Phoenix Iron & Steel Co., Phoenixville, Pa.
66	Pilgrim Drawn Steel Div., Plymouth, Mich.
67	Pittsburgh Coke & Chemical Co., Pittsburgh
68	Pittsburgh Screw & Bolt Co., Pittsburgh

P6	Pittsburgh Steel Co., Pittsburgh
P7	Portsmouth Div., Detroit Steel Corp., Detroit
P8	Plymouth Steel Co., Detroit
P9	Pacific States Steel Co., Niles, Cal.
R1	Reeves Steel & Mfg. Co., Dover, O.
R2	Reliance Div., Eaton Mfg. Co., Massillon, O.
R3	Republic Steel Corp., Cleveland
R4	Roebbing Sons Co. (John A.), Trenton, N. J.
R5	Rotary Electric Steel Co., Detroit
S1	Sharon Steel Corp., Sharon, Pa.
S2	Sheffield Steel Corp., Kansas City
S3	Shenango Furnace Co., Pittsburgh
S4	Simonds Saw & Steel Co., Fitchburg, Mass.
S5	Sloss Sheffield Steel & Iron Co., Birmingham
S6	Standard Forging Corp., Chicago
S7	Stanley Works, New Britain, Conn.
S8	Superior Drawn Steel Co., Monaca, Pa.
S9	Superior Steel Corp., Carnegie, Pa.
S10	Sweet's Steel Co., Williamsport, Pa.
S11	Seidelhuber Steel Rolling Mills, Seattle
T1	Tonawanda Iron Div., N. Tonawanda, N. Y.
T2	Tennessee Coal & Iron Div., Birmingham
T3	Tennessee Products & Chem. Corp., Nashville
T4	Thomas Steel Co., Warren, O.
T5	Timken Steel & Tube Div., Canton, O.
T6	Tremont Nail Co., Wareham, Mass.
U1	United States Steel Co., Pittsburgh
U2	Universal-Cyclops Steel Corp., Bridgeville, Pa.
W1	Wallingford Steel Co., Wallingford, Conn.
W2	Washington Steel Corp., Washington, Pa.
W3	Weirton Steel Co., Weirton, W. Va.
W4	Wheatland Tube Co., Wheatland, Pa.
W5	Wheeling Steel Corp., Wheeling, W. Va.
W6	Wickwire Spencer Steel Div., Buffalo
W7	Wilson Steel & Wire Co., Chicago
W8	Wiconain Steel Co., S. Chicago, Ill.
W9	Woodward Iron Co., Woodward, Ala.
W10	Wyckoff Steel Co., Pittsburgh
Y1	Youngstown Sheet & Tube Co., Youngstown

## MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails	Wire Nails	Wire Fence 9-15 1/2 ga.	Single Loop Bale Ties	Twisted Barbed Wire	Galv. Barbed Wire	Merch. Wire Anvil	Merch. Wire Gal.
	Col	Col	Col	Col	Col	Col	d/lb	e/lb
Alabama City R3*	118	135	132	144	6.075	6.325		
Aliquippa, Pa. J3	127	141	135	148	6.075	6.525		
Atlanta A8	130	140	135	149	6.325	6.675		
Bartonsville K2	127	138	140	147	6.075	6.45		
Buffalo W6								
Cleveland A6					6.075	6.225		
Cleveland A5					6.075	6.225		
Crawfordsville M4	130	140	134	149	6.175	6.55		
Danora, Pa. A5*	118	133	132	142	6.075	6.225		
Duluth A5*	118	133	132	142	6.075	6.225		
Fairfield, Ala. T2*	118	133	132	142	6.075	6.225		
Houston S2	135	147		156	6.475	6.925		
Johnston, Pa. B3	127	148	149		6.075	6.575		
Joliet, Ill. A5*	118	133	132	142	6.075	6.225		
Kokomo, Ind. C9			142		6.175	6.425		
Los Angeles B2					7.025			
Kansas City S2	139		144	160	6.675	7.125		
Minnequa C6*	123	146	138	153	6.325	6.70		
Monessen P6								
Moline, Ill. R3			136					
Pittsburg, Cal. C7*	137	156	156	162	6.075	7.125		
Pittsburgh P6	127	138		147	6.075	6.45		
Portsmouth P7	132				6.47			
Rankin, Pa. A5*	118	133		142	6.075	6.225		
Sa. Chicago R3*	118	135	140	144	6.075	6.325		
S. San Fran. C6				167	7.025	7.40		
Sparrows Pt. B3	129		134	151	6.075	6.675		
Starlings, Ill. N4	127	138	132	147	6.075	6.45		
Struthers, O. Y1					6.075	6.475		
Terrance, Cal. C7*	138				7.025			
Worcester A5*	124				6.375	6.525		
Williamsport, Pa. S10								

Cut Nails, carloads, base \$7.80 per 100 lb. (less 28¢ to jobbers), at Conshohocken, Pa., (A2), Wheeling, W. Va., (W5), \$7.80.

\* Add 45¢ per 100 lb on Std. & Coated Nails.

† Zinc extra not included on Galv. Merch. Wire.

‡ Galv. Merch. Wire based on 15¢ Zinc.

## STAINLESS STEELS

Base price, cents per lb., f.o.b. mill. Add 4.7 pct

Product	301	302	303	304	316	321	347	410	416	430
Ingot, rerolling	14.25	15.25	16.75	16.25	24.75	20.00	21.75	12.75	14.75	13.00
Slabs, billets, rerolling	18.50	20.00	22.00	21.00	32.25	26.25	28.50	16.50	20.00	16.75
Forg. discs, die blocks, rings	34.00	34.25	36.75	35.75	53.00	40.25	44.75	28.00	28.50	28.50
Billets, forging	26.25	26.50	28.50	27.75	41.50	31.25	35.00	21.50	22.00	22.00
Bars, wires, structurals	31.25	31.50	31.00	33.00	19.25	37.00	41.50	25.75	26.25	26.25
Plates	33.00	33.25	35.25	35.25	52.00	40.75	45.25	27.00	27.50	27.50
Sheets	41.00	41.25	43.25	43.25	57.00	49.25	53.75	36.50	37.00	39.00
Strip, hot-rolled	26.50	26.75	28.50	28.25	43.75	37.00	41.25	23.50	24.00	24.00
Strip, cold-rolled	31.00	31.25	33.25	33.25	59.00	49.25	53.75	39.50	40.00	41.00

STAINLESS STEEL PRODUCING POINTS—Sheets: Midland, Pa., C11; Brackenridge, Pa., A1; Butler, Pa., A2; McKeesport, Pa., U1; Washington, Pa., W2; (type 316 add 4.5¢) J2; Baltimore, Md., M1; Middletown, O., A1; Massillon, O., R3; Gary, Ind., U1; Bridgeville, Pa., U2; New Castle, Ind., J2; Ft. Wayne, Ind., J4; Lockport, N. Y., R4.

Strip: Midland, Pa., C11; Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; (type 316 add 4.5¢); W. Leeburg, Pa., A3; Bridgeville, Pa., U2; Detroit, Mich., M2; Canton, Massillon, O., R3; Middletown, O., A2; Harrison, N. Y., D3; Youngstown, Pa., C3; Lockport, N. Y., S4; Sharon, Pa., S1 (type 301 add 4.5¢); Butler, Pa., A1; Wallingford, Conn., W1.

Bars: Baltimore, Md., A7; Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1; F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; Chicago, Ill., U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, Ill., A3; Lockport, N. Y., S4; Canton, O., T3; Ft. Wayne, Ind., J4.

Wire: Waukegan, Ill., A3; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, Ind., J4; Harrison, N. J., D3; Baltimore, Md., A7; Dunkirk, N. Y., A3; Monessen, Pa., F1; Syracuse, N. Y., C11; Bridgeville, Pa., U2.

Structurals: Baltimore, Md., A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, N. Y., C11.

Plates: Brackenridge, Pa., A3 (type 416 add 4.5¢); Butler, Pa., A2; Chicago, Ill., U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., J2; Lockport, N. Y., S4; Middletown, Pa., J2; Cleveland, Massillon, R3.

Forged discs, die blocks, rings: Pittsburgh, Pa., C11; Syracuse, N. Y., C11; Ferndale, Mich., A3; Washington, Pa., J2.

Forging billets: Midland, Pa., C11; Baltimore, Md., A7; Washington, Pa., J2; McKeesport, Pa., F1; Massillon, Canton, O., R3; Watervliet, N. Y., A3; Pittsburgh, Pa., U1; Syracuse, N. Y., C11.

ALLEGHENY LUDLUM—Slightly higher on Type 301; slightly lower on others in 300 series

WASHINGTON STEEL—Slightly lower on 300 series except where noted.

# Miscellaneous Prices

## PIPE AND TUBING

Base discounts f.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD														SEAMLESS					
	1½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½-3 In.		3½-4 In.	
	Bik.	Gal.	Bik.	Gal.	Bik.	Gal.	Bik.	Gal.	Bik.	Gal.	Bik.	Gal.	Bik.	Gal.	Bik.	Gal.	Bik.	Gal.	Bik.	Gal.
STANDARD T. & C.																				
Sparrows Pt. B3	30.5	8.25	33.5	12.25	35.5	15.75	36.5	16.25	37.0	17.25	37.5	17.75	38.0	18.25						
Youngstown R3	32.5	10.25	35.5	14.25	38.0	17.75	39.4	18.25	39.0	19.25	39.5	19.75	40.0	20.25						
Fontana K1	21.0	+1.25	24.0	2.75	26.5	6.25	27.0	6.75	27.5	7.75	28.0	8.25	28.5	8.75						
Pittsburgh J3	32.5	10.25	35.5	13.25	38.0	15.75	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.75	24.0	2.25	27.0	5.75	29.0	7.75
Alton Ill. L1	31.5	9.25	34.5	13.25	37.0	16.75	37.5	17.25	38.0	18.25	38.5	18.75	39.0	19.25						
Sharon M3	32.5	9.25	35.5	13.25	38.0	16.25	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.25						
Pittsburgh N1	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0		27.0		29.0	
Wheeling W5	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25						
Wheatland W4	32.5	10.25	35.5	13.25	38.0	15.75	38.5	16.75	39.0	17.25	39.5	17.75	40.0	18.75						
Youngstown Y1	32.5	10.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75
Indiana Harbor Y1	31.5	9.25	34.5	13.25	37.0	16.75	37.5	17.25	38.0	18.25	38.5	18.75	39.0	19.25						
Lorain N2	32.5	15.25	35.5	14.25	38.0	17.75	38.5	18.25	39.0	19.25	39.5	19.75	40.0	20.25	24.0	3.75	27.0	6.75	29.0	8.75
E&TRA STRONG																				
PLAIN ENDS																				
Sparrows Pt. B3	30.25	9.5	34.25	13.5	36.25	17.0	36.75	17.5	37.25	18.5	37.75	19.0	38.25	19.5						
Youngstown R3	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5						
Fontana K1	20.75		24.75		26.75		27.25		27.75		28.25		28.75							
Pittsburgh J3	32.25	10.0	36.25	14.0	38.25	16.0	38.75	17.0	39.25	17.5	39.75	18.0	40.25	19.0	23.75	2.0	27.75	6.5	31.25	10.0
Alton Ill. L1	29.25	8.5	33.25	12.5	35.25	16.0	35.75	16.5	36.25	17.5	36.75	18.0	37.25	18.5						
Sharon M3	32.25	10.5	36.25	14.5	38.25	17.5	38.75	18.0	39.25	18.5	39.75	19.0	40.25	19.5						
Pittsburgh N1	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75		27.75		31.25	
Wheeling W5	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5						
Wheatland W4	32.25	10.0	36.25	14.0	38.25	16.0	38.75	17.0	39.25	17.5	39.75	18.0	40.25	19.0						
Youngstown Y1	32.25	11.5	36.25	15.5	37.75	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	22.5	23.75	4.5	27.75	8.5	31.25	12.0
Indiana Harbor Y1	31.25	10.5	35.25	14.5	37.25	17.5	37.75	18.5	38.25	19.5	38.75	20.0	39.25	20.5						
Lorain N2	32.25	11.5	36.25	15.5	38.25	19.0	38.75	19.5	39.25	20.5	39.75	21.0	40.25	21.5	23.75	4.5	27.75	8.5	31.25	12.0

Galvanized discounts based on zinc, at 17¢ per lb. East St. Louis. For each lb. change in zinc, discounts vary as follows: 1/2 in., 3/4 in., and 1 in., 1 pt.; 1 1/4 in., 1 1/2 in., 2 in., 3/4 pt.; 2 1/2 in., 3 in., 1/2 pt. Calculate discounts on even cents per lb. of zinc, i.e., if zinc is 16.5¢ to 17.50¢ per lb., use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Threads only butt-weld and seamless, 1 pt. higher discount. Plain ends, butt-weld and seamless, 3 in. and under 3 1/2 pts. higher discount. Butt-weld jobbers' discount, 5 pct. St. Louis zinc price now 13.5¢.

## COKE

Furnace, beehive (f.o.b. oven)	Net-Ton
Connellsville, Pa.	\$14.50 to \$15.00
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	\$17.50 to \$18.00
Foundry, oven coke	
Buffalo, del'd	\$26.58
Chicago, f.o.b.	23.00
Detroit, f.o.b.	24.00
New England, del'd	24.80
Seaboard, N. J., f.o.b.	22.75
Philadelphia, f.o.b.	22.70
Swedeland, Pa., f.o.b.	22.60
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	23.50
Cleveland, del'd	25.72
Cincinnati, del'd	25.06
St. Paul, f.o.b.	22.50
St. Louis	25.40
Birmingham, del'd	21.69
Neville Island	23.00

## ELECTRICAL SHEETS

22 Ga. H-R cut length	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
F.o.b. Mill Cents Per Lb.							
Beech Bottom W5	7.85	9.10	9.90	10.45	11.00	11.70	
Brackenridge A3	7.35	7.85	9.10	9.90	10.45	11.00	11.70
Granite City G2		8.55	9.80				
Ind. Harbor J3	7.35	7.85	9.10				
Mansfield E2	7.35	7.85	9.10	9.90			
Niles, O. N3	7.35	7.85					
Vandergrift U1	7.35	7.85	9.10	9.90	10.45	11.00	11.70
Warren, O. R3	7.35	7.85	9.10				
Zanesville A7	7.35	7.85	9.10	9.90	10.45	11.00	11.70

## CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago	\$105.30 to \$108.80
6 to 24-in., del'd N.Y.	108.50 to 109.50
6 to 24-in., Birmingham	91.50 to 96.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less	\$123.00 to \$130.00
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.	

## BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
<b>Babcock &amp; Wilcox</b>	2	13	23.93	28.14	23.19	27.28
	2 1/2	12	32.17	37.83	31.19	36.67
	3	12	35.78	42.11	34.69	40.82
	3 1/2	11	44.72	52.65	43.36	51.05
	4	10	55.52	65.31	53.83	63.32
<b>National Tube</b>	2	13	22.81	27.94	22.23	
	2 1/2	12	31.28	38.31	30.51	
	3	12	35.87	43.93	34.98	
	3 1/2	11	42.56	52.12		
	4	10	54.02	64.16		
<b>Pittsburgh Steel</b>	2	13		28.58		
	2 1/2	12	32.16	39.19		
	3	12	36.87	44.93		
	3 1/2	11	43.76	53.32		
	4	10	55.54	67.68		

## C-R SPRING STEEL

		CARBON CONTENT				
Cents Per Lb. F.o.b. Mill		0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Bridgeport, Conn. S7						
Carnegie, Pa. S9						
Cleveland A5	5.10	7.30	8.25	10.20	12.50	
Detroit D1	6.45	7.50	8.80			
New Castle, Pa. B4	5.80	7.65	8.25	10.20		
New Haven, Conn. D1	6.70	7.60	8.20			
Sharon, Pa. S1	5.80	7.65	8.25	10.20	12.50	
Trenton N. J. R4		7.95	8.55	10.50	12.80	
Weirton W. Va. W3	5.80	7.65	8.25	10.20	12.50	
Worcester, Mass. A5	5.40	7.60	8.55	10.50	12.80	
Youngstown C5		7.65	8.25	10.20	12.50	

## PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges

Producing Point	Basic	Foundry	Malleable	Bessemer	Low Phos.	Bl. Furnace Silvery	Low Phos. Charcoal
Bethlehem B3	56.50	57.00	57.50	58.00			
Birmingham R3	50.88	51.38					
Birmingham W9	50.88	51.38					
Birmingham S5	50.88	51.38					
Buffalo R3	54.50	55.00	55.50				
Buffalo H1	54.50	55.00	55.50			66.75	
Buffalo W6	54.50	55.00	55.50				
Chicago I4	54.50	55.00	55.00	55.50			
Cleveland A5	54.50	55.00	55.00	55.50	59.50		
Cleveland R3	54.50	55.00	55.00				
Danversfield, Tex. L3	50.50	51.00	51.00				
Duluth I4	54.50	55.00	55.00	55.50			
Erie I4	54.50	55.00	55.00	55.50			
Everett, Mass. M6		59.75	60.25				
Fontana K1	60.50	61.00					
Geneva, Utah C7	54.50	55.00					
Granite City, Ill. K3	56.40	56.90	57.40				
Hubbard, Ohio Y1	54.50	55.00	55.00				
Ironton, Utah C7	54.50						
Jackson, Ohio J1 G1						65.50	
Lyle, Tenn. T3							68.50
Minnequa C6	56.50	57.50	57.50				
Monessen P6	56.50						
Neville Island P4	54.50	55.00	55.00	55.50			
Pittsburgh U1	54.50			55.50			
Sharpsville S3	54.50	55.00	55.00	55.50			
Steelton B3	56.50	57.00	57.50	58.00	62.50		
Swedeland A2	58.50	59.00	59.50	60.00			
Toledo I4	54.50	55.00	55.00	55.50			
Troy, N. Y. R3	56.50	57.00	57.50		62.50		
Youngstown Y1	54.50	55.00	55.00	55.50			
N. Tonawanda, N. Y. T1		55.00	55.50				

**DIFFERENTIALS:** Add 50¢ per ton for each 0.25 pct silicon over base, 1.75 to 2.25 pct, except low phos., 1.75 to 2.00 pct; 50¢ per ton for each 0.50 pct manganese over 1 pct, \$2 per ton for 0.5 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 pct and over. Silvery iron: Add \$1.50 per ton net for each 0.50 pct silicon over base, 6.01 to 6.50 pct; up to 17 pct. \$1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer ferrosilicon prices are \$1 over comparable silvery iron.

## Miscellaneous Prices

### RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb.	No. 1 Std. Rd.	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer U1	3.775	4.25	4.925	6.65			
Chicago R3							
Cleveland R3							
Ensley T2	3.775	4.25					
Fairfield T2		4.25		6.65	4.775		
Gary U1	3.775	4.25			4.775		
Ind. Harbor I3	3.775		4.925	6.65	4.775		
Johnstown B3		4.25					
Juliet U1		4.25	4.925				
Kansas City S2							
Lackawanna B3	3.775	4.25	4.925		4.775		
Lebanon B3				6.65			
Minnequa C6	3.775	4.75	4.925	6.65	4.775	9.85	
Pittsburgh R3							
Pittsburgh O1							
Pittsburgh P5				6.65			
Pittsburgh J3					4.925		
Pittsburgh C7					4.925		
Seattle B2				7.15	4.925		
Steelton B3	3.775		4.925		4.775		
Struthers Y1				6.65			
Terrance C7					4.925		
Youngstown R3				6.65			

### TOOL STEEL

F.o.b. mill  
Add 4.7 pct

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$15.05
18	4	1	—	5	\$22.13
18	4	2	—	—	\$1.65
1.5	4	1.5	8	—	\$1.06
6	4	2	6	—	\$6.56
High-carbon chromium					\$3.56
Oil hardened manganese					\$6
Special carbon					\$3.56
Extra carbon					\$7
Regular carbon					\$3
Warehouse prices on and east of Missis-					
sippi are 3.5¢ per lb. higher. West of					
Mississippi, 5.5¢ higher.					

### CLAD STEEL

Add 4.7 pct

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa. L4	\$29.58	
Washington, Pa. J2	\$29.5	
Claymont, Del. C4	\$28.00	
Consobocken, Pa. A2		\$27.50
New Castle, Ind. I2	\$29.77	\$26.24
Nickel-carbon		
10 pct Coatesville, Pa. L4	32.5	
Inconel-carbon		
10 pct Coatesville, Pa. L4	40.5	
Monel-carbon		
10 pct Coatesville, Pa. L4	33.5	
No. 302 Stainless-copper stainless, Carnegie, Pa. A4		77.00
Aluminized steel sheets, hot dip, Butler, Pa. A7		77.5

### ELECTRODES

Cents per lb, f.o.b. plant threaded  
electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb.
GRAPHITE		
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.87
6	48, 60	20.95
4, 5	40	21.60
3	40	22.61
2 1/2	24, 30	22.15
2	24, 30	25.36
CARBON		
40	100, 110	\$3.03
35	65, 110	\$3.03
30	65, 84, 110	\$3.03
24	72 to 104	\$3.03
20	84, 90	\$3.03
17	60, 72	\$3.03
14	60, 72	\$3.57
10, 12	60	\$3.84
8	60	9.10

### FLUORSPAR

Washed gravel, f.o.b. Rosiclare, Ill.  
Price, net ton; Effective CaF<sub>2</sub> content:  
76% or more \$43.00  
80% or less 40.00

### BOLTS, NUTS, RIVETS, SCREWS

#### Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh,  
Cleveland, Birmingham or Chicago)

#### Nuts, Hot Pressed, Cold Punched—Sq.

	Pct Off List		
	Less	Less	
	Keg.	Keg.	
	Reg.	Hvy.	
1/2 in. & smaller.	15	28 1/2	15
9/16 in. & 5/8 in.	12	25	6 1/2
3/4 in. to 1 1/2 in.			21
Inclusive	9	23	1
1 1/2 in. & larger.	7 1/2	22	1

#### Nuts, Hot Pressed—Hexagon

1/2 in. & smaller.	26	37	22	34
9/16 in. & 5/8 in.	16 1/2	29 1/2	6 1/2	21
3/4 in. to 1 1/2 in.				
Inclusive	12	25	2	17 1/2
1 1/2 in. & larger.	8 1/2	23	2	17 1/2

#### Nuts, Cold Punched—Hexagon

1/2 in. & smaller.	26	37	22	34
9/16 in. & 5/8 in.	23	35	17 1/2	30 1/2
3/4 in. to 1 1/2 in.				
Inclusive	19 1/2	31 1/2	12	25
1 1/2 in. & larger.	8 1/2	23	2	17 1/2

#### Nuts, Semi-Finished—Hexagon

	Reg.	Hvy.	
1/2 in. & smaller.	35	45	28 1/2
9/16 in. & 5/8 in.	23	35	17 1/2
3/4 in. to 1 1/2 in.			30 1/2
Inclusive	24	36	15
1 1/2 in. & larger.	13	26	8 1/2
	Light		23
7/16 in. & smaller	35	45	
1/2 in. thru 5/8 in.	28 1/2	39 1/2	
3/4 in. to 1 1/2 in.			
Inclusive	26	37	

#### Stove Bolts

Pct Off List

Packaged, steel, plain finished 48—10  
Packaged, plain finish 31—10  
Bulk, plain finish\*\* 62\*  
\*Discounts apply to bulk shipments in  
not less than 15,000 pieces of a size and  
kind where length is 3-in. and shorter;  
5000 pieces for lengths longer than 3-in.  
For lesser quantities, packaged price ap-  
plies.  
\*\*Zinc, Parkerized, cadmium or nickel  
plated finishes add 6¢ per lb. net. For  
black oil finish, add 2¢ per lb. net.

#### Rivets

Base per 100 lb

1/2 in. & larger \$7.85

#### Cap and Set Screws

(In bulk)

Pct Off List

Hexagon head cap screws, coarse or  
fine thread, 1/4 in. thru 5/8 in. x 6  
in., SAE 1020, bright 54  
3/4 in. thru 1 in. up to & including 6 in. 48  
1/2 in. thru 5/8 in. x 6 in. & shorter  
high C double heat treat 46  
3/4 in. thru 1 in. up to & including 6 in. 41  
Milled studs 35  
Flat head cap screws, listed sizes 16  
Phillister head cap, listed sizes 34  
Set screws, sq head, cup point, 1 in.  
diam. and smaller x 6 in. & shorter 53

#### Machine and Carriage Bolts

Pct Off List

	Less	C.
1/2 in. & smaller x 6 in. & shorter	15	28 1/2
9/16 in. & 5/8 in. x 6 in. & shorter	18 1/2	30 1/2
3/4 in. & larger x 6 in. & shorter	17 1/2	29 1/2
All diam. longer than 6 in. & Lag, all diam. x 6 in. & shorter	14	27 1/2
Lag, all diam. longer than 6 in.	23	35
Plew bolts	31	33
	34	

### REFRACTORIES

#### Fire Clay Brick

Carloads, per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa.  
(except Salina, Pa., add \$5) \$94.60  
No. 1 Ohio 88.00  
Sec. quality, Pa., Md., Ky., Mo., Ill. 88.00  
No. 2 Ohio 79.20  
Ground fire clay, net ton, bulk (ex-  
cept Salina, Pa., add \$1.50) 13.75

#### Silica Brick

Mt. Union, Pa., Ensley, Ala. \$94.60  
Childs, Pa. 99.00  
Hays, Pa. 100.10  
Chicago District 104.50  
Western Utah and Calif. 111.10  
Super Duty, Hays, Pa., Athens,  
Tex., Chicago 111.10  
Silica cement, net ton, bulk, East-  
ern (except Hays, Pa.) 16.50  
Silica cement, net ton, bulk, Hays,  
Pa. 18.70  
Silica cement, net ton, bulk, Ensley,  
Ala. 17.60  
Silica cement, net ton, bulk, Chic-  
ago District 17.60  
Silica cement, net ton, bulk, Utah  
and Calif. 24.70

#### Chrome Brick

Per Net Ton

Standard chemically bonded Balt.  
Chester \$82.00

#### Magnesite Brick

Standard, Baltimore \$104.00  
Chemically bonded, Baltimore 93.00

#### Grain Magnesite St. %-in. grains

Domestic, f.o.b. Baltimore  
in bulk fines removed \$62.70  
Domestic, f.o.b. Chewelah, Wash.,  
in bulk 36.30  
in sacks 41.80

#### Dead Burned Dolomite

F.o.b. producing points in Pennsylv-  
ania, West Virginia and Ohio  
per net ton, bulk Midwest, add  
10¢; Missouri Valley, add 20¢ \$13.75

### LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered  
lower Lake ports. Prices effective July  
26, 1952

Gross Ton

Old range, bessemer \$9.45  
Old range, nonbessemer 9.30  
Mesabi, bessemer 9.20  
Mesabi, nonbessemer 9.05  
High phosphorus 9.05  
After adjustments for analysis, prices  
will be increased or decreased as the case  
may be for increases or decreases after  
Dec. 1, 1950, in Lake vessel rates, upper  
Lake rail freights, dock handling charges  
and taxes thereon.

### METAL POWDERS

Per pound, f.o.b. shipping point, in ton  
lots, for minus 100 mesh.

Swedish sponge iron a.l.f. 10.9¢  
New York, ocean bags... 12.0¢  
Canadian sponge iron, del'd.  
in East 12.0¢  
Domestic sponge iron, 98+%  
Fe, carload lots 15.5¢ to 17.0¢  
Electrolytic iron, annealed,  
99.5+ % Fe 44.0¢  
Electrolytic iron, unannealed,  
minus 325 mesh, 99+ % Fe 60.0¢  
Hydrogen reduced iron, mi-  
nus 300 mesh, 98+ % Fe. 63.0¢ to 80.0¢  
Carbonyl iron, size 5 to 10  
micron, 98%, 99.8+ % Fe. 83.0¢ to 114.8¢  
Aluminum 31.8¢  
Brass, 10 ton lots 30.00¢ to 33.85¢  
Copper, electrolytic 10.75¢ plus metal value  
Copper, reduced 10.00¢ plus metal value  
Cadmium, 100-199 lb. 95¢ plus metal value  
Chromium, electrolytic, 99%  
min., and quantity, del'd 33.50  
Lead 7.5¢ to 12.0¢ plus metal value  
Manganese 57.6¢  
Molybdenum, 99% 22.75¢  
Nickel, unannealed 88.0¢  
Nickel, annealed 95.0¢  
Nickel, spherical, unannealed 92.0¢  
Silicon 38.5¢  
Solder powder 7.0¢ to 9.0¢ plus met. value  
Stainless steel, 302 83.00¢  
Stainless steel, 316 81.10¢  
Tin 14.00¢ plus metal value  
Tungsten, 99% (65 mesh) 84.00¢  
Zinc, 10 ton lots 23.0¢ to 30.5¢

## Ferroalloy Prices

### Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk in carloads delivered. (65-72% Cr, 2% max. Si.)

0.06% C ...	30.50	0.20% C ...	29.50
0.10% C ...	30.00	0.50% C ...	29.25
0.15% C ...	29.75	1.00% C ...	29.00
2.00% C ...			28.75
65-69% Cr, 4-9% C ...			22.00
62-66% Cr, 4-6% C, 6-9% Si ...			22.60

### S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads ...	21.60
Ton lots ...	23.75
Less ton lots ...	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads ...	27.75
Ton lots ...	30.05
Less ton lots ...	31.85

### High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

### Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C ...	\$1.14
0.50% max. C ...	1.10
9 to 11% C ...	1.08

### Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed: lump 4-in. x down, bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

### Calcium-Silicon

Contract price per lb of alloy, dump delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.	
Carloads ...	19.00
Ton lots ...	22.10
Less ton lots ...	23.60

### Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.	
Carloads ...	20.00
Ton lots ...	22.30
Less ton lots ...	23.30

### CM52

Contract price, cents per lb of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots ...	20.75
Less ton lots ...	22.00

### SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots ...	17.50
Less ton lots ...	19.50

### V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 2-11% Mn.

Ton lots ...	16.50
Less ton lots ...	17.75

### Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed ...	18.00
Ton lots to carload packed ...	19.00
Less ton lots ...	20.50

### Ferromanganese

78-82% Mn, maximum contract base price, gross ton, lump size.

F.o.b. Niagara Falls, Alloy, W. Va., Ashtabua, O. ... \$225

F.o.b. Johnstown, Pa. ... \$227

F.o.b. Sheridan, Pa. ... \$225

F.o.b. Etna, Clairton, Pa. ... \$228

Add \$2.80 for each 1% above 82% Mn, subtract \$2.80 for each 1% below 78% Mn.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk ...	12.45
Ton lots, packed ...	14.05

### Spiegeleisen

Contract prices gross ton; lump, f.o.b.

	16-19% Mn	19-21% Mn
	3% max. Si	3% max. Si
Palmerton, Pa.	\$84.00	\$85.00
Pgh. or Chicago	\$84.00	\$85.00

### Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

36% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed ...	36.95
Ton lots ...	38.45

### Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads ...	30.00
Ton lots ...	32.00
Less ton lots ...	34.00 to 37.00

### Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn ...	28.45	30.30	31.50
0.07% max. C ...	27.95	29.80	31.00
0.15% max. C ...	27.45	29.30	30.50
0.30% max. C ...	26.95	28.80	30.00
0.50% max. C ...	26.45	28.30	29.50
0.75% max. C, 80-85% Mn.			
5.0-7.0% Si ...	23.45	25.30	26.50

### Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ... 21.35¢

### Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk ...	11.40
Ton lots ...	13.05
Briquet, contract basis carlots, bulk delivered, per lb of briquet ...	12.65
Ton lots, packed ...	14.25

### Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$95.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00. Add \$1.00 per ton for each additional 0.50% Si up to and including 17%. Add \$1.00 for each 0.50% Mn over 1%.

### Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

98% Si, 2% Fe ...	18.00
97% Si, 1% Fe ...	18.50

### Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk ...	6.95
Ton lots ...	8.55

### Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.

25% Si ...	20.00	75% Si ...	14.30
50% Si ...	12.40	85% Si ...	15.65
90-95% Si ...			17.00

### Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots ...	\$2.05	\$2.95	\$3.75
Less ton lots ...	2.40	3.30	4.55

### Ferrovandium

35-55% contract basis, delivered, per pound, contained V.

Openhearth ...	\$3.00-\$3.10
Crucible ...	3.10-3.20
High speed steel (Primus) ...	3.20-3.25

Alaifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.

Carloads ...	9.90
Ton lots ...	11.30

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo ... \$1.15

Ferrocolumbium, 50-60% 2 in. x D, contract basis, delivered per pound contained Cb.

Ton lots ...	\$4.90
Less ton lots ...	4.95

Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta ... \$3.75

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo ... \$1.32

Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$3 unitage, per gross ton ... \$65.00

10 tons to less carload ... \$75.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... \$1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... \$1.50

Less ton lots ... 1.55

Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton ... \$177.00

Ferrotungsten, standard, lump or ½ x down, packed, per pound contained W5, ton lots, delivered ... \$5.00

Molybdate oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. ... \$1.14

bags, f.o.b. Washington, Pa., Langeloth, Pa. ... \$1.13

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound

Carload, bulk lump ...	14.50¢
Ton lots, bulk lump ...	15.75¢
Less ton lots, lump ...	16.25¢

Vanadium Pentoxide, 86 - 89% V<sub>2</sub>O<sub>5</sub> contract basis, per pound contained V<sub>2</sub>O<sub>5</sub> ... \$1.28

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.

Ton lots ...	21.00¢
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Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.

Carload, bulk ...	7.00¢
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### Boron Agents

Borasil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B ... \$5.25

Bortam, f.o.b. Niagara Falls

Ton lots, per pound ...	45¢
Less ton lots, per pound ...	50¢

Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots, per pound ...	10.00¢
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Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, Ton lots ... \$1.20

F.o.b. Wash., Pa.; 100 lb up

10 to 14% B ...	.85
14 to 19% B ...	1.80
19% min. B ...	1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.

No. 1 ...	\$1.00
No. 6 ...	65¢
No. 79 ...	50¢

Manganese - Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd

Ton lots ...	\$1.40
Less ton lots ...	1.57

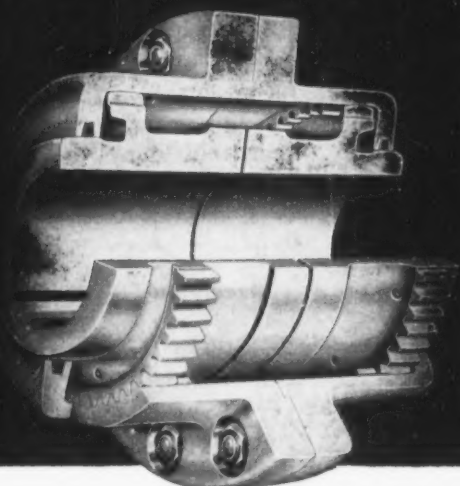
Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered

Less ton lots ...	\$1.80
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Silicaz, contract basis, delivered.

Ton lots ...	45.00¢
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# POOLE



A COPY OF CATALOG GIVING FULL DESCRIPTION AND ENGINEERING DATA SENT UPON REQUEST.

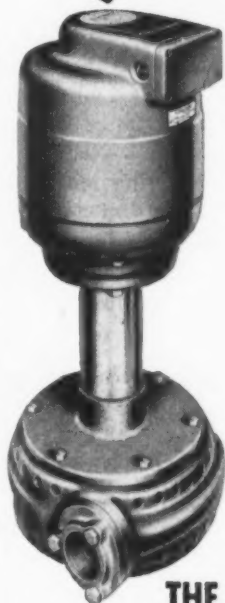
## FLEXIBLE COUPLINGS

POOLE FOUNDRY & MACHINE COMPANY

WOODBERRY, BALTIMORE, MD.



## The Leaders RUTHMAN GUSHER COOLANT PUMPS



Here is why leading machine tool manufacturers continually use Gusher Pumps as standard equipment on their machines. Gusher Pumps deliver instantaneous coolant flow . . . no packing or priming is necessary . . . pre-lubricated heavy-duty ball-bearings require no further attention . . . maintenance cost is cut to a minimum. Electronically balanced rotating assembly plus overall simple construction reduces wear.

Follow the leaders — Specify Gusher Coolant Pumps.

**THE RUTHMAN MACHINERY CO.**

1809 Reading Road

Cincinnati 2, Ohio

# TIME TESTED

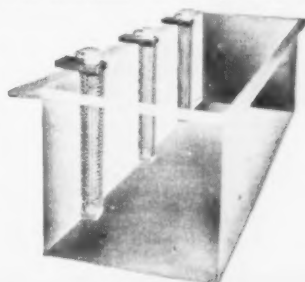


## GLOROD (ACID)

### IMMERSION HEATERS

Here's the immersion heater that overcomes all the problems you've ever had with heating corrosive solutions. Readily adapted to thermostatic control. Light weight, portable, fused quartz body is totally inert to all plating, pickling and electro polishing solutions. Vapor proof electrical connection box. Rugged construction. Long, trouble-free service. Remarkably economical. We will help you engineer special applications.

Write for Bulletin G-12



**CLEVELAND PROCESS COMPANY**  
7016 EUCLID AVENUE • CLEVELAND 3, OHIO



## ELECTRIC FURNACE STEEL CASTINGS

Deliver Seven Most  
Important Features

Sound, clean, true-to-pattern steel castings possess:

- 1—Uniform Structure—giving greater strength throughout.
- 2—Efficient Distribution of Metal—for better weight-strength ratio.
- 3—Wide Range of Mechanical Properties—to fit your specific needs.
- 4—Minimum Machining—for lower production costs.
- 5—Dimensional Stability — for better fit and better performance.
- 6—Ease of Assembly — for fabrication with other parts.
- 7—Toughness and Fatigue Resistance —for longer life, less replacement.

We furnish this quality of product and by cooperating with your engineers in matters of design and pattern construction assist you to secure castings of maximum strength, minimum weight and utmost economy.

**CRUCIBLE STEEL CASTING CO.**  
LANSLOWNE, PENNA.

## CONSIDER GOOD USED EQUIPMENT FIRST

### BELT GRINDING UNIT

Hill Clutch & Machine & Fdy. Co. Open Side Abrasive Belt Grinding Unit. Designed to accommodate slabs up to 3/4" thick x 30" wide x 30' long.

### BRAKE—LEAF TYPE

16' x 3/4" Drels & Krump Leaf Type Bending Brake, Motor Driven with 40 H.P. A.C. Motor.

### BUILDING

72'6" x 140' Steel Building—NEW—Designed for Corrugated Steel Siding and to carry load of 30 ton overhead electric traveling crane.

### CHARGING MACHINE

6000 lb. Brosius Floor Type Gasoline Driven Charging Machine. Equipped with Peel, Gasoline Engine, Rubber Tires.

### CRANE

5 ton Niles Crane 56' 3/4" Span. Three motors, 440 volt, 3 phase, 60 cycle.

### CRANE—GANTRY

5 ton Whiting Two Leg Gantry Crane 52 Ft. Span Cab Control. Three Motors 220 v. 3 ph. 60 cy.

### FLANGING MACHINE

3/4" McCabe Pneumatic Flanging Machine, Pneumatic Holdowns, Circle Flanging Attachment.

### FORGING MACHINE

5" Ajax Forging Machine or Upsetter, Motor driven. Equipped with Air Clutch.

### FURNACES—Melting

400 lb. Moore Type "UT" Melting Furnace Top Charge. Complete with Transformer. New 1943—Little Used.

15 ton Harault Model V-12 Electric Melting Furnace Top Charge hydraulically operated. Complete with Transformer Equipment.

25 ton Moore Size "NT" Melting Furnace, with 7500 KVA Transformer 13,200 vo. 3 ph. 60 cy.

### LEVELER—ROLLER

60" Aetna-Standard Roller Leveler, Motor Driven. 17 Rolls 4 1/2" Dia.

### PLANERS

48" x 48" x 20' Cincinnati, Four Head

48" x 48" x 12' Niles-Bement-Pond, Four Head

60" x 60" x 12' Niles-Bement-Pond, Four Head

72" x 72" x 12' Niles-Bement-Pond, Four Head

### PLATING MACHINE

Type "B" Crown Full Automatic, Nickel & Chrome Plating Machine, Max. Work Size

16" wide x 36" deep x 4" thick.

### PRESS—KNUCKLE JOINT

1000 ton Bliss #27 Knuckle Joint, Embossing & Coining Press, 2 1/2" stroke, 18" Shut Height.

### ROLLING MILLS

8" x 10" Schmitz Single Stand Two High With Friction Drive Rawlender.

12 1/2" x 14" Philadelphia Two High Cold Rolling Mill. Complete with Pinion Stand, 75 H.P. Motor 440/3/60. Starter and Controls, Incl. Collar.

18" x 24" Waterbury Farrel Two Stand Two High Rolling Mill. Complete with Elec. Equip.

18" x 40" Three High Roughing Mill, Complete with billet heating furnace and accessory equipment including electrical equipment

27" x 56" United Two High Skin Pass Mill

### STRAIGHTENERS

No. 3 Medart 3-Roll Straightening Machine Capacity 1" to 3 1/2" Bars or 4 1/2" O. D. Pipe or Tubing. NEW 1950.

No. 4 Kane Roach 8-Roll Straightener Capacities 2" Rounds or Squares, 3 1/2 x 3/4" Angles, 2 1/2" Channels, etc.

No. 18 Sutton Round Straightener, Motor Drive, Capacity 3/16" to 3/4" O.D. Friction Drive complete with 1/3 H.P. A.C. Motor

### TESTING MACHINE

20,000 lb. Southwark-Emery Universal Hydraulic Testing Machine

300,000 lb. SOUTHWARK-EMERY Universal Hydraulic Testing Machine.

### TRIMMING LINE

#1049 Tarrington Trimming Line, With Feed Rolls and Scrap Cutter. Capacity for steel or aluminum alloys 1/4" max. Trimmed width

28" min. 66" max. Scrap Length 3/4" min. 2 1/4" max.

### UNIVERSAL IRONWORKERS

Ryerson Steel Frame Universal Iron Worker, M.D. Capacity Punch 3/4" thru 1 1/2" Shear 1 1/2" Square 1 1/4" Round, 1/2" x 4" Flat, 4 x 4 x 1/4" Angles.

No. 200-30 Buffalo Armor Plate Universal Ironworker—Combination Punch, Shear & Bar Cutter. Motor Driven Capacities—Shear 3" Round, 2 1/4" Square, 3 1/2 x 1 1/2" Flat, 3 1/2 x 1 1/2" Angles, 12"—3 1/2 x 1 1/2 Beams, etc., Punch 1 1/2" thru 1 1/2".

**ITTERBUSH & COMPANY, INC.**

80 Church Street, New York 8, N. Y.

Phone—Gut 7-5487

# The Clearing House

## NEWS OF USED, REBUILT AND SURPLUS MACHINERY

**Leasing Looms Larger** — National Production Authority is actively pushing its program to lease used government-owned machine left-overs that have been lying idle in storage depots since World War II. If the leasing program proves popular, used machinery dealers in all parts of the country may find demand from defense contractors slipping away even more.

Many firms with defense contracts would rather lease machinery from the government than buy a used unit outright which they might never be able to use again.

**Easy Come**—Payment aspect of leasing machinery from the government has been set up to make it as appealing as possible to defense contractors. If a contractor wishes to lease a machine owned by the military, he can do so by making monthly payments of 1 pct of the unit's original purchase cost. If the leasing arrangement is made with General Services Administration, the terms are 1 pct a month of the Office of Price Stabilization's ceiling price.

NPA "machine tool inventory center" which goes under the official tag of Production Equipment Central Inventory Group reports it has inventoried 30,000 government-owned tools. PECIG estimates the value of these machines based on current replacement costs at \$450 million.

Since May 12, PECIG has allocated 3258 pieces of government-owned equipment. Of this number, 2117 were found acceptable by the defense contractors which gives the agency about a .650 batting average.

**How Much Lost**—Value of the machines accepted is judged to be nearly \$30 million which in a way indicates the amount of business lost by used machinery dealers, providing they could have supplied the same units themselves.

PECIG reports most of the ma-

chine tools leased are being used for production of jet engines, aircraft, shells and tanks. But like dealers all over the country, they, too, are faced with the problem of strong demand for desirable tools that they don't have. Most requests that they have been unable to fill are for general purpose units.

**Streamlined**—To step up the leasing tempo, NPA is doing everything it can to simplify the transaction. Ralph S. Howe, director of NPA Metalworking Equipment Div. stated, "For the first time, detailed information has been gathered and indexed on these tools, scattered in storage depots all over the country, and is now available in one centralized office (PECIG) so that contractors in dire need of tools can check the data and determine whether they can find an immediate use for any of them."

NPA cited several specific examples of how the machine tool inventory center was helping to break production bottlenecks. It stated that three 84-in. x 24-ft planers, belonging to Army Ordnance, have been allocated and soon will be put to work in Upper New York State to relieve a slowdown of tank hull components.

In addition, three milling machines have been leased to a New England machine tool builder to help the company turn out broaches and broaching machines for the manufacture of jet engine parts. And 28 internal grinders have been allocated to a contractor to assist the tank engine program.

**Chapter Meetings**—Due to the fact that not enough members sent in reservations, the fishing trip, planned by the New York Chapter of the Machinery Dealers National Assn., was canceled. But the first fall meeting of the New York-New England MDNA Chapter will held at 6 p.m., Monday, Oct. 6, at Cavanagh's Restaurant, 258 West 23rd St., New York.

# THE CLEARING HOUSE

## CONSIDER GOOD USED EQUIPMENT FIRST

### AIR COMPRESSORS

12" Pennsylvania Air Compressor, 100# Pressure, Complete with 75 H.P. Syn. Motor  
11" x 14" Sullivan WJ-3 Air Compressor 885 C.F.M. Driven by 150 H.P. Westinghouse Syn. Motor 440/3/60

### BAR TURNING MACHINE

Medart HF-2 Bar Turning Machine, Capacity 1" to 2 1/2". Complete with Accessories

### BENDING ROLLS

4" x 4" Hyerson Pyramid Type Bending Roll  
12" x 12" Southwark Pyramid Type, Bending Roll  
12" x 12" Southwark Pyramid Type, Motor Driven

### BRACKS—LEAF TYPE

8" x 4" Dries & Krump Leaf Type Bending Brake  
Motor Driven with 5 H.P. A.C. Motor  
12" x 3/16" Chicago #226 Steel Apron Brake, M.D.  
12" x 3/16" Dries & Krump Leaf Type Bending Brake, Motor Dr. with 40 H.P. A.C. Motor

### BUILDING

75' x 140' Steel Building—NEW—Designed for Corrugated Steel Siding—and to carry load of 30 ton Overhead Electric Traveling Crane

### BULLDOZER

20 Williams White Bulldozer, Motor Dr. with 50 H.P. Motor, 440 volt, 3 phase, 60 cycle. Face of Crosshead 30" x 90" Movement of Crosshead 21"

### CHARGING MACHINE

6000 lb. Brosius Floor Type Gasoline Driven Charging Machine. Equipped with Peel, Buda Gasoline Mixing, Rubber Tires.

### CRANES—GANTRY

5 ton Whiting Two Leg Gantry Crane 52' Span Cab Control, Motor 220 v. 3 ph. 60 cy.  
15 ton P&H Two Leg Gantry Crane 45' Span With 13' Overhang one end, 10' other end and 5 ton Auxiliary. Two Trolleys and 5 Motors, 440 volt 3 phase 60 cycle

### CRANES—OVERHEAD ELECTRIC TRAVELING

5 ton Robbins Myers 28'6" Span 230/3/60  
5 ton Niles 56' Span 440/3/60 AC  
6 1/2 ton Shepard-Niles 90' Span 440/3/60 AC  
10 ton Shaw With 2 1/2 yd. Clamshell Bucket 67' Span 230 Volt D.C.  
10 ton P & H 40' Span 440/3/60 AC  
10 ton Erie 60' Span 440/3/60 AC  
15 ton Niles 60' Span 230 Volt D.C.  
15 ton Toledo 46' Span 220/3/60  
20 ton Bedford 50' Span 230/3/60 AC  
20 ton Morgan 68' Span 230 Volt DC  
With 5 ton Auxiliary

### DIEING MACHINES

75 ton Henry & Wright High Speed Dieing Machine Double Roll Feed, Scrap Cutter, 3" Stroke  
100 ton Henry & Wright Dieing Machine, 4" Stroke, 13" Shut Height. Complete Elec. Equip.

### DIE CASTING MACHINES

Model BA-12 KUX Die Casting Machine, Air operated, Plunger Goggles Type for zinc, lead & tin. Die space between bars 1 1/4" x 1 1/4". Die Separates 8" NEW 1949, never used  
Pratt & Whitney Type BL-2416 Single Spindle 3-Dimensional Koller Machine, with complete electrical equipment and accessories

### FLANGING MACHINE

1/2" McCabe Pneumatic Flanging Machine, Pneumatic Holdowns, Circle Flanging Attachment

### FORGING MACHINES

1 1/2", 3", 3", 4", 5", Ajax  
1", 3", 4", 5", Ames  
8 Ajax—Air Clutch

### FURNACES—HEATING

60 KW Leeds & Northrup Home Furnace #9478-UB-28, With controls. Work space 28" dia. x 28" deep

### FURNACES—MELTING

400 lb. Moore Type "UT" Melting Furnace, Top Charge, Complete with Transformer, New 1943—Little Used  
15 ton Herovell Model V-12 Top Charge Hydraulically Operated, Complete with Transformer Equip.  
15 ton Moore Size "NY" Melting Furnace With 7500 KVA Transformer #3,460/3/60

### GEAR REDUCERS

300 H.P. United Combination Reduction Gear & Pinion Stand, Gear Ratio 8.581:1  
400 H.P. Farrel Birmingham, Size 18 Reduction Gear, Ratio 750 to 244 RPM  
700 H.P. Falk Single Reduction Gear, Ratio 875 to 295 RPM  
1800 H.P. Mesta Gear Reduction Unit, Ratio 19:1

### GRINDER

No. 4 Cincinnati Centrifugal Grinder, Motor Driven, Capacity standard work rest 2" to 8" dia., optional work rest 1/4" to 2". Special fixtures will allow work to be handled up to 8" dia.

### GRINDER—CYLINDRICAL

14 x 34" Norton Type C, Complete with Elec. Equip.

### GRINDERS—SURFACE

824 Abrasive Vertical Spindle Surface Grinder 8" x 24" Wet Tape  
No. 2 B & H Universal Surface Grinder, Complete with all necessary equipment & Elec.

### HAMMERS—BOARD DROP

1200, 1000, 6000 lb. Model J2 Chambersburg

### HAMMERS—STEAM DROP

1500, 4000 lb Erie

### HAMMERS—STEAM FORGING

1200 lb. Maxwell Single Frame  
1500, 1600, 2000, 2500, 4000 lb. Chambersburg  
600, 1500, 2500 lb. S.B.P.  
400, 1100, 1500, 2000, 2500, 4000# Erie  
20,000 lb. Massey Steam Forging Hammer

WE OFFER A COMPLETE LIQUIDATION SERVICE ON ANY BASIS WHICH CIRCUMSTANCES INDICATE WOULD BE MOST BENEFICIAL, WHETHER BY AUCTION, PRIVATE LIQUIDATION OR OUTRIGHT SALE

CONSULTANTS IN MANUFACTURING PROBLEMS FOR OVER A QUARTER OF A CENTURY  
THERE IS NO SUBSTITUTE FOR EXPERIENCE  
CONTACT US IN CONFIDENCE WITHOUT COST OR OBLIGATION

### HAMMERS—MISCELLANEOUS

No. 6S Nasel Hammer, Geared Motor Drive  
200 lb. Bradley Compact Hammer, Arr. for Motor Drive with 10 H.P. A.C. Motor  
2000 lb. Chambersburg Pneumatic Hammer Complete with Elec. Equip. New 1951  
15"x12" Chambersburg Cereotamp Hammer, 18" stroke

### LATHE—TURRET

Model 2L Gisholt Geared Head Turret Lathe, Spindle Bore 4-1/16", Elec. Equipment and numerous accessories incl. NEW 1951

### LEVELERS—ROLLER

36" McKay 17 Roll Leveler, 5/4" Dia. Rolls Belted Motor Drive  
60" Aetna Standard 17-Roll Leveler, 4 1/2", Dia. Rolls Arr. Motor Drive.

### MOTORS

1250 H.P. Westinghouse Induction Motor 6600 volt 3 phase 60 cycle 593 R.P.M.  
2000 H.P. General Elec. Induction Motor 6600 volt 3 phase 60 cycle 600 R.P.M.  
2500 H.P. General Elec. Direct Current Motor 6600 volt 175/350 R.P.M.

### MOTOR GENERATOR SET

740 H.P. General Electric Syn. Motor 4400 volt A.C. with two generators 750 KVA 230 volt D.C., Complete with Panel Board, etc.

### NAIL MAKING MACHINES

No. 1 1/2 National—SIZES 10D, 12D, 16D, 20D, 30D  
No. 3 National—Size 6D  
No. 2 Glader—SIZES 6D, 7D, 8D, 9D  
Angell—SIZES 10D, 12D, 16D, roofing

### PLANER—PLATE EDGE

30" x 1 1/4" Southwark Plate Edge Planer, Motor Driven, Equipped with 16 Pneumatic Jacks

### PRESSES—HYDRAULIC

No. 200 Milwaukee Bristling Press, Complete with Pumps, Piston Load 118 tons, Hydraulic Operating Pressure 2100 lbs. psi.  
75 ton Williams White Straightening Press, 27" Stroke, Bed 8' x 16", 6 1/2" Dia. Ram  
200 ton Bliss Hydrodynamic 48" Stroke Bed Area 24" x 24", Hyd. Pump Incl.  
500 ton Southwark Hydraulic 24" Stroke, 78" Daylight Platen 64" R to L x 32" F to B  
500 ton Southwark Open Throat Hydraulic Press 12" Stroke Platen 54" x 56"  
700 ton Elmes Forging Press, 27" Stroke, 30" Dia. Ram, Platen 40" x 48" with overhang 48" x 139". Complete with Pump & Motor

### PRESS—HYDRAULIC WHEEL

100 ton Elmes Inclined Hyd. Wheel Press 72" Between Parallel Bars, Complete with Pump & Motor

### PRESS—KNUCKLE JOINT

27 Bliss Knuckle Joint Embossing & Coining Press 1000 ton Capacity, 3 1/2" Stroke, 18" Shut Height

### PRESSES—STRAIGHT SIDE

No. 87A Bliss 250 Ton Capacity, Double Geared 22" Stroke, 30" x 33" Bed Area, Air Cushion  
No. 305 Bliss 9" Stroke 14" Shut Height Equipped with Marquette Air Cushion  
No. 59 Toledo Double Geared Tie Rod Press 255 ton Friction Clutch 18" Stroke 36 1/2" x 35" Bed Area  
No. 3 Furman Super Speed Press 50 ton Capacity, NEW 1944—never used.  
No. 875B Bliss Single Geared 1 1/4" Stroke, Double Roll Feed & Chopper, 10 H.P. A.C. Motor.  
No. 639 Bliss High Production Press, 1 1/4" Stroke 81-40 Verso 250 ton Press, 30" Stroke Bed Area 40"x44"  
No. 13 Zeh & Hahemann Patent Percussion Press 150 ton 12" Stroke, 17" x 17" Bed Area  
No. 10-B Bliss 800 Ton, 10" Stroke Bed Area 60" x 126"  
No. 7 Bliss 400 Ton 8" Stroke Bed Area 48" x 108"  
No. 1037-5/8 Hamilton 300 Ton 16" Stroke Bed Area 48" x 104"  
No. 934C Toledo 175 Ton, 6" Stroke Bed Area 40" x 72"  
No. 606 1/2 Hamilton 150 Ton, 12" Stroke Bed Area 36" x 60"  
No. 934D Toledo 150 Ton, 12" Stroke Bed Area 36" x 54"

### PRESSES—TRIMMING

Bliss 8.8 Trimming Press with Side Shear, 250 Ton Capacity, 8" Stroke 32"x39" Bed Area  
No. 3 Erie Flywheel Drive Trimming Press, 3 1/2" Stroke 12" Trimming Guides  
No. 18 Erie Trimming Press, 100-150 Ton

### PUNCH—BEAM

Long & Allstatter Double End Beam Punch, Capacity Beam Punch End—Punch flanges and web 24" I-beam and smaller

### PUNCH & SHEAR COMBINATIONS

Hyerson Steel Frame Universal Ironworker, M.D. Capacity Punch 1/2" thru 1 1/2" Shear 1" Square, 1 1/4" Round, 1 1/2" x 4" Flats 4 x 4 1/4" Angles  
No. 28 U-30 Buffalo Armor Plate Universal Ironworker, Capacity Punch 1 1/2" thru 1 1/2", Shear 1" Round 3/4" Square, 5 x 1 1/2" Flat, 5 x 5 1/2" Angles  
Style EF Cleveland Single End Punch & Shear, M.D. Capacity Punch 1" thru 1 1/4"

### RIVETER

125 ton Hanna Bull Riveter, Air Driven, 24" Gap, 75" Reach, Capacity 1" rivets cold and 1 1/2" rivets hot  
ROLL—PLATE STRAIGHTENING  
7 Roll Berthel Plate Straightening Machine, Capacity 10" x 3/4", Complete Elec. Equip.

### ROLLING MILLS

7 1/2" Steckel Four High Rolling Mill, Max. Steel Width 6", Work Rolls 2 1/2" x 7 1/2", Complete with electrical equipment  
8"x10" Schmitz Single Stand Two High  
12"x16" Single Stand Two High, Comp. with Elec. Equip.  
12"x20" Waterbury Farrel Single Stand Two High  
12"x24" Waterbury Farrel Two Stand Two High  
18"x24" Waterbury Farrel Two Stand Two High  
20"x36" Poole Two Stand Two High  
22"x40" Single Stand Two High  
27"x56" United Two High Skin-pass Mill  
28"x60" Single Stand Two High  
18"x60" Three High Roughing Mill, Complete with billet heating furnace and accessory equipment incl. elec. equip.

### ROLL—TAPER FORGING

No. 00 Williams White Taper Forging Roll, Rolls 24" Dia., Shaft 8" Dia.

### SAW

No. 3 Hyerson Friction Saw, 54" Blade Hydraulic Feed, Complete with Elec. Equip.  
52" Hyerson Friction Saw, 45 H.P. Motor Capacity Approx. 9" Round, 20" I-beam, 12" H-beam

### SHEAR—ALLIGATOR

No. 7 Thomas Carlin Alligator Shear, 16" Blade, 30 H.P. D.C. Motor

### SHEARS—ANGLE

Hilles & Jones No. 2 Double Angle Shear, M.D. Capacity 6" x 6" x 2"  
Long & Allstatter Double Angle Shear, Model B, Capacity 6x6x2", Complete with Elec. Equip.

### SHEAR—BAR

No. 2 Liff Lewis Open End Bar Shear, Motor Drive, Capacity 1 1/2" Round

### SHEARS—ROTARY

No. 60 Quickwork Rotary Shear, 1/2" Capacity  
No. 100 Kling Rotary Shear, 1" Capacity  
Quickwork Heavy Duty Circle Shear 1/2" Capacity Complete with Circle Cutting Attachment

### SHEARS—SQUARING

12"x3/16" Stanco Steel Squaring Shear, Motor Dr. 8" x 3/4" Drabert Model THZ 6/2500  
8"x 3/16" Cincinnati Series 1408, Motor Driven 6" x 3/4" Long & Allstatter, Belted Motor Drive

### SLITTERS

24" Yoder No. 3 Sheet Slitter, Motor Driven, Capacity 83 cuts .015 to 4 cuts, 188 Minimum width 1/4", Entry and exit rollers, Entry and exit tables  
NEW 1951  
31" Yoder Sheet Slitter No. 530, Capacity 3 cuts .194" to 8 cuts .156" Motor Dr.  
72" Yoder Gang Slitter, Capacity 5 Cuts 36 Ga.

### STRAIGHTENERS

No. 3 Medart 3-Roll Straightening Machine Capacity 1" to 3 1/2" bars or 4 1/2" O.D. Pipe or Tubing, NEW 1950.  
No. 4 Kane & Roach 8-Roll Straightener Capacity: 3" Rounds or Squares, 3x3x3/4" Angles 3 1/2" Channels, etc.  
No. 1 1/2 B Sutton Round Straightener, Motor Dr. Capacity Tubing 3/16" to 2 1/2"—modified to handle up to 3 1/2" O.D. tubing  
No. 1B Sutton Round Straightener, Motor Drive Capacity 3/16" to 3 1/2" O.D. Friction Drive complete with 1/3 H.P. A.C. Motor  
Hallden 8-Roll Strip Straightener, Flying Shear & Cutting Machine, Capacity 14" wide 11 ga. Sheet Steel

### STRETCHER

McKay Hydraulic Bar Stretcher, Capacity up to 1 1/4" dia. in lengths 12" to 2'

### SWAGING MACHINES

No. E4 Langelier, Capacity 1 1/2" Tubing  
No. 408 Etna Swager, Capacity 4" Tubing

### TESTING MACHINES

300,000# Southwark Emery Universal Hydraulic  
60,000 lb. Olsen 4 Screw Rotating Nut Type Universal  
20,000 lb. Southwark Emery Universal Hydraulic

### TRIMMING LINE

#1042 Torrington Trimming Line, With Feed Rolls and Scrap Cutter, Capacity for steel or aluminum alloys 1/4" max. Trimm width 22" min. 60" max., Scrap Length 3/4" min., 3 1/4" max.

### TUBE MILL

Complete equipment for hot rolling seamless steel tubes ranging in sizes from 6 1/2" to 14 1/2"

### WELDERS

250 KVA Progressive Model A-6 Flash Welder 440 volt 60 cycle, Mechanical Contactor Hi-Pressure-Clamp Assembly—NEW 1949

McKay Tube or Pipe Welding Unit, Capacity 4 1/2" to 7 1/2" O.D., Complete with all accessory equipment and motors

### WIRE DRAWING MACHINE

No. 0 Waterbury Farrel 7-Die Wire Drawing Machine, Capacity 1/4" rod to #10 copper

Manufacturing

**RITTERBUSH & COMPANY, INC.**

50 CHURCH ST., NEW YORK CITY 8

Equipment

Confidential Certified Appraisals  
Liquidations — bona fide Auction Sales Arranged

October 2, 1952

Consulting Engineering Service  
Surplus Mfg. Equipment Inventories Purchases

141

# THE CLEARING HOUSE

## MILES' QUALITY

AUTOMATICS, 00G Brown & Sharpe  
AUTOMATIC, 8" Bullard Multi-Au-Matic, 6-spindle  
AUTOMATIC, 6-spindle Baird chucker  
BORING MILL, 4" Detrick & Harvey, horizontal,  
floor type  
BORING MILL, 61" Bullard Maximill  
BORING MILLS, Two No. 5D Moline, 6-spindle  
cylinder boring  
BROACH, No. 1 Foote Burt duplex surface  
BROACH, 2-ton American horizontal hydraulic  
BROACH, V42 American hydraulic, 18 ton  
BROACH, 12-ton VU 12 LaPointe vertical hydraulic  
34" stroke, new 1948  
BULLDOZER, No. 22 Williams & White  
DRILL, No. 310 Baker, heavy duty  
DRILL, 24" Cincinnati upright  
DRILL, 24" No. 25 Foote Burt  
DRILL, 12-spindle No. 12 Natco  
DRILL, 12-spindle No. 10 Delancey rail type  
DRILL, 36-spindle Bausch, adjustable spindle  
GEAR HOBBER, No. 12H G&E  
GEAR HOBBER, No. 130 Cleveland Rigidhobber  
GEAR HOBBER, No. 3 Adams Farwell  
GEAR HOBBER, Two No. 12 Barber-Colman  
GEAR HOBBER, Nos. 1 and 25 5A Lees Bradner  
HONE, Nos. 172 & 2610 Barnes hydraulic  
GEAR SHAVER, 8"-12" Red Ring  
GRINDERS, CENTERLESS, Two No. 2 Cincinnati,  
with pressure lubrication  
GRINDER, 6"x30" Cincinnati, type ER, in feed  
GRINDERS, CYLINDRICAL, 10x18 Norton with  
hydraulic quick infeed  
GRINDER, CYLINDRICAL, 12"x36" Bath universal  
GRINDERS, INTERNAL, Nos. 16-28 and 24-36  
Bryant  
GRINDERS, INTERNAL, Nos. 72A3 and 72A5  
Head  
GRINDERS, SURFACE, 12" and 16" No. 22 Healds  
GRINDER, THREAD, late No. 33 Excello, now ar-  
ranged for groove grinding  
HAMMER, Nos. 5N & 6B Hazel pneumatic  
HAMMER, 40 lb. Bradley helve  
LATHE, TURRET, No. 5 Acme universal  
LATHE, TURRET, No. 6 W&S, G. H. motor-in-base  
MILLERS, Two No. 2 Cincinnati plain  
MILLERS, Nos. 1, 2 and 3 Kent Owens hand  
MILLER, 18" Cincinnati automatic  
MILLER, 24" Cincinnati automatic duplex  
MILLER, type 45 Product-O-Matic  
MILLER, 30 1/2" x 21" x 12" Ingersoll 4-spindle  
planer type  
MILLER, 48" x 20" x 20" Ingersoll planer type,  
3 vertical heads  
MILLER, 48" x 36" x 12" Ingersoll planer type,  
adj. rail  
MILLER, 84" Ingersoll 6-spindle rotary continuous  
MILLER, THREAD, Type C Hall planetary  
MILLER, THREAD, Nos. 4, 6 and CT 36 Lees  
Bradner  
PLANNER, 28"x28"x8" Gray Double housing one head  
PLANNER, 36"x36"x8" Cleveland openside  
PLANNER, 48"x48"x12" Gray  
PRESSES, Nos. P01, P1, P2, P3, PA4, p5 and  
CA4 Ferracut  
PRESS, 50 ton Warco OBI, 1947  
PRESS, No. 61 Cleveland OBI  
PRESSES, No. 56 1/2, 57 1/2 and 77 1/2 Bliss s.s.  
trimming  
PRESS, No. 245 1/2 Hamilton s.s. tiered frame  
PRESS, No. EG54 Ferracut knuckle joint  
PRESS, 800 ton No. 665 Toledo knuckle-joint coining  
PRESS, No. DA8411 Hamilton double action toggle  
draw  
PRESS, 100 ton HPM hydraulic  
RIVETERS, large variety  
SLOTTER, 16" Bement Miles crank  
SAWS, Three 816S Kalamazoo metal cutting band,  
new  
SAW, 7" No. 14 Higley cold-cutting  
SAWS, three L-W (Toledo) power hack, new  
SHAPER, 27" Morton draw cut  
SHEAR, 38" throat No. 17F New Duty  
STRAIGHTENER, No. 0 Sutton for bars  
TAPPER, 3 1/2" Bausch lead screw, radial  
TAPPERS, Two No. 71 Ettco  
TAPPER, 19" Hammond sensitive drilling & tapping  
TESTER, 230,000 inch-pound Tinius-Olsen No. 2  
torsion  
THREADERS, 2" Landis pipe threading and cutting  
THREADERS, Two 3/4" Landis, double spindle  
THREADERS, 2" Oster rotary head  
UPSETTER, 3" National air clutch  
UPSETTERS, Two 4" Ajax heavy duty, twin-gear  
WELDER, 200 KVA Federal flash butt  
WELDER, 100 KVA Thompson automatic spot  
WELDERS, 12" and 14", 12 KVA American Elec-  
tric Fusion Co. spot

WRITE FOR CATALOG NO. 193 FOR COMPLETE LISTING

## MILES MACHINERY CO.

2025 E. Genesee Ave.  
SAGINAW, MICHIGAN

## RE-NU-BILT GUARANTEED ELECTRIC POWER EQUIPMENT D.C. MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	2200	G.E.	MCF	600	400/500
1	1750	Whse.		600	550/700
1	1500	Whse.		525	400
1	940	Whse.	QM	250	140/170
1	880	Al. Ch.		250	400/800
1	500	Whse.	CC-218	600	300/900
1	450	Whse.		550	415
1	400	G.E.	MCF	550	800/1030
1	350	Cr. Wh.	CCM-151H	230	1100
1	335	Whse.	MQ	250	300/900
1	300/300	G.E.	MPC	230	360/920
1	200	Rel.	1970T	230	720
1	150	G.E.		600	250/750
1	150	Cr. Wh.	65H	230	1150
10	150	Cr. Wh.	83H-TEFC	230	900
2	150	Whse.	SK151B	230	900/1800
1	150	Whse.	SK-201	230	360/950
1	50/120	G.E.	MCF	230	250/1000
1	100	Whse.	SK-181	230	450/1000
1	100	G.E.	CD-175	230	365/730
1	100	G.E.	CDP-115	230	1750

### MILL & CRANE

1	50	G.E.	CO-1810	230	725
1	33	Whse.	K-8	230	565
1	30	G.E.	MD-104-AA	230	700
1	20	Whse.	K-5	230	875
4	15	Whse.	K-5	230	830
8	10	C.W.	SCM-AH	230	1150
1	10	G.E.	MD-104	230	400/800
8	8.25	Whse.	K-3	230	450/1000
4	3	C.W.	SCM-FF	230	1750
2	3	Whse.	HK-2	230	835
1	3 1/4	Whse.	K-1	230	835

## A.C. MOTORS

3 phase—60 cycle

Qu.	Hp.	Make	Type	Volts	Speed
1	1800	G.E.	MT-408	2300	350
1	1500	Alth	MP	2300	720
1	800	G.E.	MP	2300	975
1	500	Whse.	CW	550	250
1	500	G.E.	IM	440	900
2	500	G.E.	M-574-Y	6600	900
1	500	G.E.	IP	550	505
1	400	Whse.	CW	440	514
1	350	G.E.	MT-442-Y	2200/4000	700
1	350	Al. Ch.		440	505
1	250	G.E.	MT-424-Y	4000	257
1	250	G.E.	MT-8598	2200	1800
1	250	Al. Ch.		550	600
1	200	Cr. Wh.	16QH	440	505
2	200	G.E.	IM17	440	585
3	200	G.E.	IM-17	440	600
1	200	G.E.	IM	440	435
1	200	G.E.	MTF	440	1170
1	150 (unused)	Whse.	CW	2300	435
1	125	Al. Ch.		440	720
4	125	G.E.	MT-506-Y	440/2200	435
2	100	G.E.	IM	440	600
5	100	A.C.	ANY	440	695
1	100	G.E.	IM-18	2200	435
1	100	Whse.	CW-868A	440	700

### SQUIRREL CAGE

2	650	G.E.	MT-5508Y	440	8570
2	450	Whse.	CS-1420	2300/4150	354
1	300	Al. Ch.		2200	385
1	300	G.E.	JK-17	440	580
1	300	G.E.	IR	440	865
8	200	G.E.	KT-557	440	1800
1	150	Whse.	CS-8568	440	880
1	150	Whse.	CR	440	580
1	150/75	G.E.	JK	440	900/450
8	125	Al. Ch.	ARW	2200	1750
1	125	G.E.	KF-6328-Z	440/2200	8585
1	125	Whse.	MT	440	485

### SYNCHRONOUS

2	8500	G.E.	TH	2300	257
2	2100	G.E.	ATI	2300	360
2	1750	G.E.	ATI	2300	3000
2	2000	Whse.		2300	120
5	735	G.E.	ATI	2300/12000	660
2	450	Whse.		2300	150
2	350	G.E.	TH	2300	150

### M-G Sets—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	D.C. Volts	A.C. Volts
3	2000	G.E.	580	660	11000*
1	2000	G.E.	514	600	6600/13200
3	1500	G.E.	514	250	6600/13200
1	1500	G.E.	720	600	6600/13200
1	1500	G.E.	880	375	4400
1	1500	Whse.	600	600	4180
2	1000	Whse.	900	850	4180
1	1000	G.E.	900	300	6600
1	1000 (3U)	G.E.	900	250	2300
1	750	Whse.	900	375	4160
1	500	G.E.	720	125	2300
1	500	Whse.	900	125/250	440
1	500	Whse.	900	250	6600/13200
1	500	Whse.	1200	125/250	2300
1	400	Whse.	1200	250	2300
1	400 (3U)	Cr. Wh.	1200	125/250	2300
1	350	G.E.	900	125	2300/4160
1	300	Al. Ch.	1200	125/250	2300
1	150	Whse.	1200	275	2300
1	140 (3U)	Cr. Wh.	1200	125/250	440/2300
1	100	Delco	1200	120/240	2300
1	100	G.E.	1170	125	220/440

\* 25 Cycle

### FREQUENCY CHANGER SETS

Qu.	KW	Make	Freq.	Voltages
1	3700	G.E.	35/40	2300/2300/4000
2	2500	G.E.	25/23.5	2300/2300
1	1000	G.E.	25/58.3	440/2300
1	500	Al. Ch.	2500	11000/2300

## BELYEA COMPANY, INC.

47 Howell Street, Jersey City 6, N. J.

## GUARANTEED TOOLS

60"x20" NILES-BEMENT-POND Geared Head Engine Lathe, rapid traverse

27"x12" MONARCH Geared Head Engine Lathe, taper attachment, AC-MD

24" x 72" centers BOYE & EMMES Heavy Duty Geared Head Engine Lathe, chuck, AC-MD.

No. 3L GISHOLT Universal Saddle Type Turret Lathe, bar feed, chucks, collets, tooling, hardened ways, rapid traverse, new 1943. Perfect Condition. Immediate Delivery.

No. 2B FOSTER Geared Head Turret Lathe, rapid traverse, AC motors

42" BULLARD New Era Type Vertical Turret Lathe, AC-MD

36" BULLARD Vertical Turret Lathe converted to Spiral Drive, AC-MD

1 1/2" LANDIS Double Head Bolt Threader, with leadscrews, MD

No. 1 DOUGLAS Plain Horizontal Mill, table 8"x32", power feeds, motor in base, No. 40 taper, new 1942.

No. 2 VAN NORMAN Plain Horizontal Mill, power rapid traverse, No. 50 taper, new 1942

No. 3-24 CINCINNATI Plain Hydromatic Mill

5-13" column CARLTON Radial Drill AC motor on arm, 15 to 1500 RPM

4" AMERICAN High Speed Sensitive Radial Drill 9" column, AC motor on arm

3 Spindle FOSDICK Drill Press, Individual AC motors for each spindle, 1942

No. 6 TOLEDO O.B.I. Press, 56 Tons

10"x24" NORTON Hydraulic Surface Grinder, 1942

25A HEALD Rotary Surface Grinder, 24" diameter, magnetic chuck

36" OHIO Dreadnaught Shaper, AC-MD

75 Ton HENRY & WRIGHT Double Crank Dieing Machine, roll feed & Scrap cutter

No. 22 MURCHEY Threader

No. 135 CLEVELAND Rigidhobbers

**O'CONNELL MACHINERY CO.**  
Tel: BAiley 5800  
1693 GENESEE ST. BUFFALO 11, N.Y.

#32 Lucas Precision Horizontal Boring Mill—Serial #32-18-21.  
6" American Radial Drill—Serial #55592  
#61A Fellows Gear Shaper  
#3 Gisholt Turret Lathe—Serial #2807-1  
16" Gould & Eberhardt Shaper  
96" Gould & Eberhardt Automatic Gear Hobber—Serial #3234  
#72A Heald Sismatic Internal Grinder—Serial #24498  
60" Hanchett Face Grinder  
Lodge & Shipley Lathe—Serial #29051  
#2 Norton Tool & Cutter Grinder—Serial #3335  
6D Potter & Johnston Automatic Chucker—Serial #70393  
72" King Heavy Duty Vertical Boring Mill Serial No. Lot 38—#175

Hazard Brownell Machine Tools, Inc.  
350 Waterman St. Providence 6, R. I.

# THE CLEARING HOUSE



## *At Auction* **MARINE CONTRACTORS AND HANDLING EQUIPMENT DIESEL GASOLINE AND ELECTRIC POWER UNITS**

*Sold by Order of*

**EASTERN SCRAP & SALVAGE CORPN.**

**270-23rd Street, Brooklyn, N. Y.**

**Tuesday, October 21, 1952, at 10 A. M.**

**on the Premises**

20 DIESEL ENGINES (From 65 to 1600 H.P.) by General Motors, Chicago, G. M. C., Fairbanks Morse, Superior and Hercules. Large Stock of Diesel Engine Parts.

45 DIESEL AND OTHER GENERATORS (from 4 to 210 KVA) by Westinghouse, General Electric, Western Electric, Fairbanks Morse, American, Crocker Wheeler, Delco, Stamford and others.

16 GASOLINE ENGINES (300 to 800 H.P.) by Hall Scott, Wright and Sterling.

11 WELDING MACHINES (300 to 1000 AMP) and large stock Welding Electrodes.

18 NEW G. E. 1000 H.P. STEAM TURBINES.

18 PORTABLE AIR COMPRESSORS (from 105 to 500 C.F.M.) by Ingersoll Rand, Gardner Denver and Schramm.

3 SHEPHERD NILES 6-TON OVERHEAD ELECTRIC TRAVELING CRANES.

35 LIFT TRUCKS. 4 Baker Rauland and Clark 6000-lb. Gasoline Fork Lift Trucks, 6000-lb. Automatic Electric Platform Lift Truck, 30 Yale & Towne 3500-lb. Hand Operated Hydraulic Lift Trucks, 5 Y & T and other 1/4 to 6 Ton Electric Hoists. FORD, REO and OLIVER TRACTORS.

MACHINE TOOLS. Productomatic Miller, 2 Niles Punches, Power Radial Drill, General Engineering Multiple Riveter, Set Taylor Wilson Pinch Rolls, Crescent Insertor and Crimper,

L & A Shear, Shutz O'Neill Pulverizer, Homestead Degreaser, Ingersoll Rand Drill Sharpener, Northfield Band Saw, Walker Turner 8" Saw Table, Multiplex 20" Radial Saw, Jig Saw, Drill Presses, Etc.

PAGE Diesel Driven Double Drum Hoist and CLYDE Gasoline Driven Double Drum Hoist.

CONTRACTORS EQUIPMENT. Caterpillar D-50 Diesel Tractor, Le Tourneau Tournapull, Le Tourneau Tournacranes, 13 Lidgerwood and other 4-cyl. Gasoline 5-Ton Stevedore 18-ft. Boom Cranes, 2 Bucyrus Erie Steam Pile Driving Cranes, Y & T Electric Self Propelled Crane, P & H Mack Truck Crane, Universal White Truck Crane, Wagon Drills, Portable Concrete Mixers, 6-Ton Road Roller, 8-Ton Locomotive, Locomotive Boiler, Pile Driving Hammer, Etc.

MISCELLANEOUS: 700 Electric Portable 180 Cycle Hand Drills, Screw Drivers and Nut Runners; 150 AC Motors to 75 H.P.; 1000 Thousand Watt Electric Light Bulbs, Quantities Electrical Equipment, Hoists, Pumps, Blowers, Rope, Cable, Shackles, Air Coolers, Condensers, Ejectors, 1000 Grindstones, 1400 Fencing Sets, 5000 Sanding Discs, 8000 Gas Mask Repair Kits, Lot Lubricants, 60 New Lubricating Pumps, 100 New A.C. Spark Plug Fuel Oil Filter Assemblies, 131 New Iron Fireman Wire Cutter and Pipe Bending Press Sets, Lot Aluminum Window Ledges and Steel Window Sash, 13,000 lbs. Stainless Steel in Coils and Strips, Etc.

**INSPECTION DAILY (EXCEPT SATURDAY) UNTIL SALE**

*Descriptive, Illustrated Brochure Upon Application to*

**SAMUEL T. FREEMAN & CO., Auctioneers**

**1808-10 CHESTNUT STREET, PHILADELPHIA 3, PA.**

80 FEDERAL STREET, BOSTON 10, MASS.

50 CHURCH STREET, NEW YORK 7, N. Y.

# THE CLEARING HOUSE

**CALL Curry!**

## FOR SURPLUS STEEL PLANT EQUIPMENT

1—30" Dia. x 54" Face 2-High Balance Sheet Breakdown Mill, complete with 30" Pinion Stand, Motor Operated Screwdown, Couplings, Spindles, Spindle Carriers, Bed Plates, etc.

1—6000 H.P. General Electric Motor, 3 phase, 60 cycle, 2300 volt, 90 RPM, Type TSM-80

1—2000 H.P. General Electric Slip Ring Mill Type Motor, 236 RPM, 3 phase, 60 cycle 2300 volts, complete with liquid slip reg-

Write for the Curry List of available steel plant equipment.

ulator, in and out plugging, and all other controls for mill type operation.

1—114" x 48" Lewis Plate Shear, complete with Holddown, Drive, and 90 H.P. 3/60/220 volt Motor.

1—84" x 514" Diameter 17 Roll Leveller, complete with 40 H.P. DC Motor, Capacity 1/32" to 1/8" x 84".

See our ad on Page 90

**ALBERT Curry & CO. INC.**

**STEEL PLANT EQUIPMENT**

941 OLIVER BUILDING - PITTSBURGH 22, PENNA.  
Phone Atlantic 1-1370

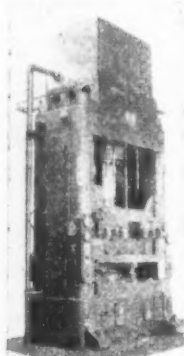
1—60" x 412" Diameter 17 Roll Leveller, arranged for 25 H.P. Direct Motor Drive

1—72" Hydraulic Stretcher Leveller, complete with Motor, hydraulic Pump, and Controls. Excellent condition.

1—Scrap Baller (NEW), 24" diameter x 37" face roll, hydraulically retractable mandrel, 10 H.P. Motor required.

1—712" 4-High Reversing Cold Reduction Mill, complete with Coiling and Uncoiling Equipment, Motors, Motor Generator Set, and all Electrical Equipment.

Cable Address: CURMILL-PITTSBURGH



### H.P.M. Hydraulic Presses

**NEW 1948**

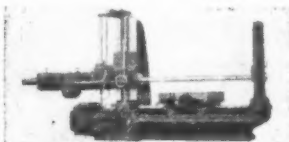
In excellent condition and can be seen under power

#### 300 TON H.P.M. FASTRVERSE

Bolster plate area 48" x 36"  
Vertical down acting Ram diameter 18"  
Maximum travel 24"  
Shut Height 40"  
Equipped with hydraulic units, air cushions  
Motors standard AC 3/60/440V

#### 400 TON H.P.M. FASTRVERSE

Bolster plate area 72" x 48"  
Vertical down acting Ram diameter 20"  
Maximum travel 36"  
Shut Height 40"  
Equipped with hydraulic units, air cushions  
Motors standard AC 3/60/440V



#### No. 6 DEFIANCE HORIZ. BORING BAR

Exceptionally Fine Machine

Morse Taper #6  
Diameter of Spindle 4 1/2"  
Working Surface of Table 36" x 72"  
Travel of Spindle (2" x 30") 60"  
Max. Distance Center of Spindle Top of Platen 37"  
Max. Distance Center of Spindle Top of Bed 47 1/2"  
Speed Changes 10 (from 7 1/2 to 157 RPM)  
Motor Driven Standard AC

#### B48 NATCO MULTIPLE SPINDLE DRILL PRESS

Bored for 36 Spindles 1 1/2" Joints  
26" Diam. Round Column Head  
High & Low Speed Head  
Coolant System, Self Oiling System  
15 HP Standard AC Motor  
New 1943



Multiple Punch No. 30-A W. W. 600-tons  
Multiple Punch No. 6 Cleveland 750-tons  
Multiple Punch Size G. L. & A. 940-tons  
300 Ton Oil Geared High Speed 2-Column Hydraulic Press, Stroke 18", ram 27" x 23"

750 Ton William White Self-Contained Down Moving Hydraulic Press, Bed 36" x 42", practically new.

Nipple Threading Machines (3), New 1950, 1/2", 1/4", 2"

Roller Pipe Cutter.  
H. & J. Straightening Rolls 5/8" x 48"

Kane & Roach #24 Angle Bender, Capacity 6 x 6 x 1"

5" Ajax Upsetting & Forg. Machs. twin gears, twin flywheels, susp. slides.

National Upsetting & Forg. Machs. 1", 2" Ajax and Acme Upsetting & Forg. Machs., not susp. slides, sizes from 1" up.

Williams White Horizontal Bender & Straightener, Capacity 15" beams.

W.W. Bulldozers, #2, 3, 5; #3 & #4 High Speed; #29-U type, reversing clutch

Chambersburg & B. & S. 800 lb. Board Hammers.

Niagara Shear, Capacity 3 ft. 3/16".

Nazel Air Forg. Hammer #6-B, 7" sq.

Bradley Hammers, Cushioned Helve, Up-right & Compact.

Bar Shear #12 B. C. Buffalo 5" Rd.

Bar Shears, Open End., Table cast on Slant; also Guillotine 1 1/2" to 3"

Knuckle Joint Press 200-ton, 6" str.; EG-54 Ferracut 400-ton

600-ton R. D. Wood Incl. Hydr. Locomotive Wheel Press, 96" betw. bars

#50-A Quickwork Whiting Rotary Shear 3/4"

BOLT, NUT & RIVET MACHINERY, COLD HEADERS, THREAD ROLLERS, THREADING MACHINES, TAPERS, COLD BOLT TRIMMERS, SLOTTERS, HOT HEADERS AND TRIMMERS, COLD AND HOT PUNCH NUT MACHINES, POINTERS.

**DONAHUE STEEL PRODUCTS CO.**  
1913 W. 74th Street, Chicago 36, Ill.

### LATE TYPE MACHINERY

AUTOMATIC, 1 1/2"—4 Spin. Gridley Model G  
BOLT THREADER, 2" Landis, 2 hds., M.D. (2)  
BOLT THREADER, 1 1/2" Reliance Williams  
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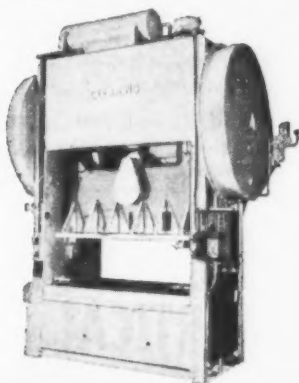
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- 1—2 Yd. Keehring 80G Crane
- 1—355 P. & H. Dragline
- 1—35 Ton Davenport Diesel Electric Loco.
- 2—No. 6 and 80-D Northwest Shovels
- 1—10-Ton Link Belt Model 55 Wagon Crane
- 1—Northwest 25 Shovel Attachment
- 1—10-Ton Stiff Leg Derrick
- 1—40-Ton Orton Diesel Loco. Crane
- 1—40-Ton Industrial Brownhoist Oil Fired Loco. Crane, New 1943

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Girard Trust Co. Bldg., Phila. 2, Pa.

Rittenhouse 6-2311

1—Waste Acid Disposal Plant, agitator 12' x 12' x 6', complete with all agitator equipment, "C" Bins, bin signals, material elevator, truck hopper, Gravimetric feeder, rotary bin gate, lime slaker, dust & vapor removal unit, all accessories.

1—30 ton Wiley Stiff Leg Derrick, 60' boom, 32' mast, 12' bull ring, like new.

1—800 HP, Falk Gear Reducer, ratio 9.15 to 1.

1—1250 HP, Falk Gear Reducer, ratio 3.91 to 1.

*Lou F. Kinderman*

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## STAR MOLY H.S. HACK SAW BLADES

Mfd. Clemson Bros. - Size 17" x 1"  
.065 10 Teeth

Excellent — In original factory packages,  
1 doz. per package — 100 gross available  
Price \$75 per Gross in 4 Gross Lots

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Market 7-0635

3—10-ton Shaw Overhead Cranes, 67' 1" span, 230 VDC, box girders, structural end trucks, cage type Shaw motors and control, mechanical and electrical brake on hoist — heavy type — good condition — stored inside — ready to ship. PRICE f.o.b. Pittsburgh, Pa.

\$9,500.00 each

SEND ME YOUR CRANE INQUIRIES —  
200 other cranes, various tonnages,  
spans and current.

JAMES P. ARMEL — Crane Specialist

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Telephone: Grant 1-4449

## FOR SALE STAINLESS STEEL TYPE 304

10 gauge 36" x 96", 20,000 lbs.  
11 gauge 36" x 96", 2,000 lbs.  
Material is HRAP #1 finish.  
Original mill packing on skids.  
Mill test reports available.

SHALLAND CORP.

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42" swing, Serial No. 9500  
New Era Type

POWER PRESS SPECIALISTS

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## 23 NEW STEEL TANKS

9—10,000 GAL. CAP. 1/4 IN. SHELL  
5—15,000 GAL. CAP. 5/16 IN. SHELL  
9—20,000 GAL. CAP. 3/8 & 5/16 IN. SHELL  
LESTAN CORP., ROSEMONT, PENNA.

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Good Used Equipment

Every type of machine available. Find the equipment you need in the  
CLEARING HOUSE SECTION  
of THE IRON AGE

#26 Buffalo Forge Armour Plate Slitting Shear, 1 1/4" Round Cap. 10HP.

#1 Buffalo Forge Wrapping Rolls, M. D.

FALK MACHINERY COMPANY

18 Ward St. Baker 5887 Rochester 5, N. Y.

## 800 H.P. MILL MOTOR

800 HP, 870 RPM Westinghouse Slip Ring. Type CW, 2200/3/60.  
Complete with semi-automatic control panel & flexible coupling.

F. H. CRAWFORD & COMPANY, INC.  
30 Church Street New York 7, N. Y.

# THE CLEARING HOUSE

## MOTORS - M. G. SETS - TRANSFORMERS

ENGINEERED AND REBUILT BY SPECIALISTS IN OUR MODERN PLANT

### DIRECT CURRENT MOTORS

Qu.	H.P.	Make	Type	RPM
1	3000	Whae.	Encl. (Rev.)	600
1	2400	Whae.	Encl. (Rev.)	600
1	1500	Whae.	Encl. (Rev.)	600
1	1200	Whae.	Encl. (Rev.)	600
1	800	Whae.	Encl. (Rev.)	600
1	500	G.E.	CD-169-A	1150
1	300/350	El. Dy.	No. 22	400/1200
1	250	G.E.	MPC	825/975
1	200	G.E.	MPC	500/1200
1	200	Whae.	MPC	300/1200
1	180	G.E.	MPC	400
1	150	C.W.	83-H	890
1	125	Whae.	SK-190	400
1	125	Whae.	SK-184	575/850
1	90/160	G.E.	MPC	625/1125
1	50	Whae.	SK	500/1500
1	50	Whae.	SK	250/1000
1	40	Whae.	SK-140	500/1700
1	35	O.E.	RF-14	500/1500
1	35	O.E.	CD-125	400/1200
1	35	G.E.	CD-147	300/1200
1	35	Rel.	35P	250/1000
1	32 1/2	Whae.	SK-150	400/1200
1	30/75	Whae.	SK-151L	400/1200
1	30	Al. Ch.	E-145	400/1200
1	30	G.E.	CDM-105	875/1750
1	27 1/2	El. Dy.	158	450/1350
1	25	Whae.	SK-123	500/1500
1	25	G.E.	RF-13	400/1600
1	25	Whae.	SK-140	400/1200
1	25	G.E.	CD-123	400/1200
1	25	Whae.	SK-111L	250/1000
1	20	Al. Ch.	E-130	400/1200
1	20	G.E.	CD-123	300/1200

All above 230-VDC except where marked\*\*\*

\*\*\*-Pedestal bearing mill design 525/600-VDC.

Rev.-designed for mill reversing service.

\*-T.E.F.C.

### MOTOR GENERATOR SETS

Qu.	K.W.	Make	RPM	Volts DC	Volts AC
1	2400 (3-U)	Al. Ch.	720	525	4800
1	2400 (3-U)	Whae.	720	600	4800/2400
1	1900	G.E.	514	550	2300
2	500	C.W.	720	573	2300/440
1*	500	C.W.	720	250/275	2300/440
1	500 (3-U)	Whae.	1200	250	440
1	300	Al. Ch.	1200	250	2300
1	250	Whae.	1200	125/250	2300
1	200	Whae.	1200	125/250	2300/440
1	200	Ridgway	900	275	2200
1	155	G.E.	720	250	2300/440
1	150	G.E.	1200	500	2300/440
1	100	Al. Ch.	1200	125/250	4000/2300
1	100	Delco	1200	125/250	440/220
1	100	C.W.	1200	125	440/220
1	100	Ridgway	1200	275	4000/2300

Motor Generator Sets  
complete with control  
Still on their foundations

Available for immediate shipment

(3)-Whae. (4) G.E. 1000 K.W. 900 V.D.C.  
generators, spd. interpole. 514 RPM., 1440-  
HP., Syn. motors, 11000 V, 3 ph. 60 cy.  
(will reconnect for 6600 volt)

(3)-G.E. 1500 K.W. 250 V.D.C. 514 RPM.,  
Cyd. interpole. poleface windings. 2100-HP.,  
Syn. motors .8 P.F.-13200 V, 3 ph. 60 cy.  
(will reconnect 6600 or 4160 v)  
Priced right before Removal

### SLIP RING MOTORS—CONSTANT DUTY 3-Phase, 60-Cycle

Qu.	H.P.	Make	Type	Volts	RPM
1**	1800	G.E.	MT-498	2300	853
1**	1200	G.E.	MT-26	2200	275
2**	1000	Al. Ch.	ANY	2200	235
1**	600	G.E.	MT-20	2300	360
1	500	G.E.	I-16-M	2300	450
1	400	Al. Ch.	ANY	2300	514
1	400	G.E.	MT-412	2200	450
1	300	Al. Ch.	ANY	2200	514
1	250	Al. Ch.	ANY	440	720
1	250	G.E.	MT-414	2200	360
1	200	G.E.	I-16-M	2200	600
1	150	G.E.	I-13-M	2200	1750
1	125	Whae.	CW-870	2200	900
1	100	F.M.	H20C	440	900
2	100	G.E.	I-15-M	2300	514
1	75	Whae.	CW-7540	440	720
1	60	Whae.	C.W.	440	900
1	50	G.E.	MT-536	2200	1200

### TRANSFORMERS—Power

Qu.	Make	KVA	Type	Phase	Voltage
1	G.E.	2760 DII	3	7300/6900-240/480	
3	Packard	250 A	1	13200-2200	
3	G.E.	100 H	1	33000-2300	
3	Whae.	100 Auto		4160/2400-2400/-	1385
3	Al. Ch.	50 OISC	1	22000-220	
2	Uptegraft	37 1/2 HD		2300-115/230	
2	Kyliman	13 Dry	1	440-240	
45 (new)	AL. Ch.	3 OISC	1	2400-120/240	

## ELECTRIC TRAVELING GANTRY CRANE

10-ton Champion 100' span between ground rails, 31' overhang one end, 23'9" other end, 45' lift, with 1200' of 100# rail. Now 550-VAC, will arrange for 220/440-VAC or 230-V.D.C. AVAILABLE FOR IMMEDIATE INSPECTION AND SHIPMENT. In excellent condition. The kind of crane that is seldom on the market.

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CABLE ADDRESS

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Surf. Comb. 84" x 29' Radiant Tube  
Surf. Comb. 47" x 35' Radiant Tube  
Elec. Furn. Co. 24"x13' Elec.-170KW  
Elec. Furnace Co. 57" x 20' Gas Fired  
Elec. Furn. Co. 54"x13' Radiant Tube  
General Elec. 16"x12' Elec.-127 KW  
Elec. Furn. Co. 29"x17' Radiant Tube

### PUSHER (Gas Carburizers):

Holcroft 72" x 29' Continuous  
Holcroft 36" x 45' Continuous

### CONVEYOR:

Holcroft 20" x 12' Gas Fired

### THE JOE MARTIN COMPANY

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Phone: TW 2-9400

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125 ton  
MORGAN  
65' span

Excellent Condition

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Over 6200 Total H.P.

G.E.—WEST.—RELIANCE, etc

Speeds 500 to 1750 RPM

2—150 HP 6—40 HP 75—10 HP  
1—125 HP 2—30 HP 78— 7 1/2 HP  
12—100 HP 1—25 HP 21— 3 HP  
10— 75 HP 29—20 HP 22— 2 HP  
2— 60 HP 55—15 HP 31—1 & 1 1/2 HP

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Established 1910

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### ELECTRIC FURNACE TRANSFORMER—80 KVA

H.T. voltage 440/220—5 to 10% taps. L.T. voltage 55 to 100. Single phase, 60 cycle. Mfg. by Electric Furnace Co.

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W0odward 1-1894

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Contracting Equipment  
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Complete  
Excellent Condition

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SWITCH MATERIAL •  
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TOOLS • TIES • TIE  
PLATES • BUMPERS •  
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4201 WYOMING • P.O. BOX 186 • DEARBORN, MICH.

### STAINLESS STEEL ROUND BARS

TYPE 303		
3/16"	Diameter	Weight 500 lbs.
5/16"	Diameter	Weight 620 lbs.
1/2"	Diameter	Weight 500 lbs.
5/8"	Diameter	Weight 228 lbs.
9/16"	Diameter	Weight 317 lbs.
11/16"	Diameter	Weight 231 lbs.
3/4"	Diameter	Weight 1,000 lbs.
13/16"	Diameter	Weight 978 lbs.
15/16"	Diameter	Weight 23 lbs.
1"	Diameter	Weight 12,000 lbs.
1 1/8"	Diameter	Weight 944 lbs.
1 3/16"	Diameter	Weight 210 lbs.
1 5/16"	Diameter	Weight 4,403 lbs.
1 3/8"	Diameter	Weight 2,964 lbs.
1 3/4"	Diameter	Weight 2,157 lbs.
1 15/16"	Diameter	Weight 2,400 lbs.
3"	Diameter	Weight 219 lbs.

TYPE 304		
1/2"	Diameter	Weight 500 lbs.
5/16"	Diameter	Weight 1,000 lbs.
3"	Diameter	Weight 200 lbs.
1 1/4"	Diameter	Weight 620 lbs.

TYPE 309		
5/16"	Diameter	Weight 600 lbs.

TYPE 347		
3/4"	Diameter	Weight 1,002 lbs.
1 3/16"	Diameter	Weight 200 lbs.
1 21/64"	Diameter	Weight 1,210 lbs.

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TRACTORS  
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1 Detroit Electric Furnace, type CC-  
60K.W. 3000 lb. capacity. Two  
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Price \$14,500.00

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1948 Invoice Price  
Unused 90 inch Cupola, Skip Hoist Charger,  
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ACCESSORIES & SWITCH MATERIALS  
INQUIRIES SERVICED PROMPTLY

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PRICE: \$1,050.00  
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Oil Burner, #4532 (1924) 60' Boom, Mag-  
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dition, Reasonable Price.

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Magnet specialists since 1910

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Age carries more weight and  
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1/2" Capacity x 10'  
220 Volt—60 Cycle—3 Phase  
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**COMPRESSOR** VACUUM PUMP  
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2000 to 3000 KVA ELECTRIC FURNACE  
TRANSFORMER WITH TAP CHANGER, for  
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in good condition also circuit breaker for same  
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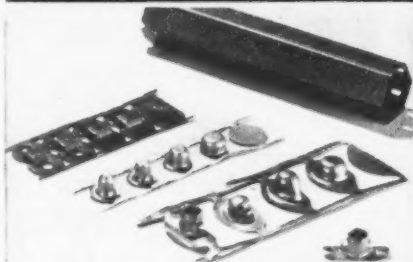
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Buyers of Surplus Steel Inventories  
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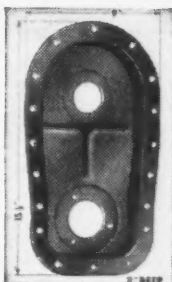


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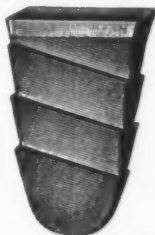
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made of stamped steel  
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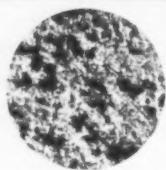
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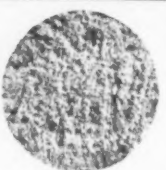
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Quotations promptly furnished, send us your  
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**DIAMITE** Abrasive Resistant Castings  
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Fully Equipped—Pattern Foundry & Machine Shop  
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Stock dies for producing washers from  
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Special Forgings of Every Description.  
We solicit your prints or model for  
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Gray Iron and Semi Steel Castings,  
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pattern work.

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22 Miles from Philadelphia, Pennsylvania

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OVER 35 YEARS EXPERIENCE  
Steel Castings—5 to 15,000 lbs.  
Careful Workmanship—Top Quality  
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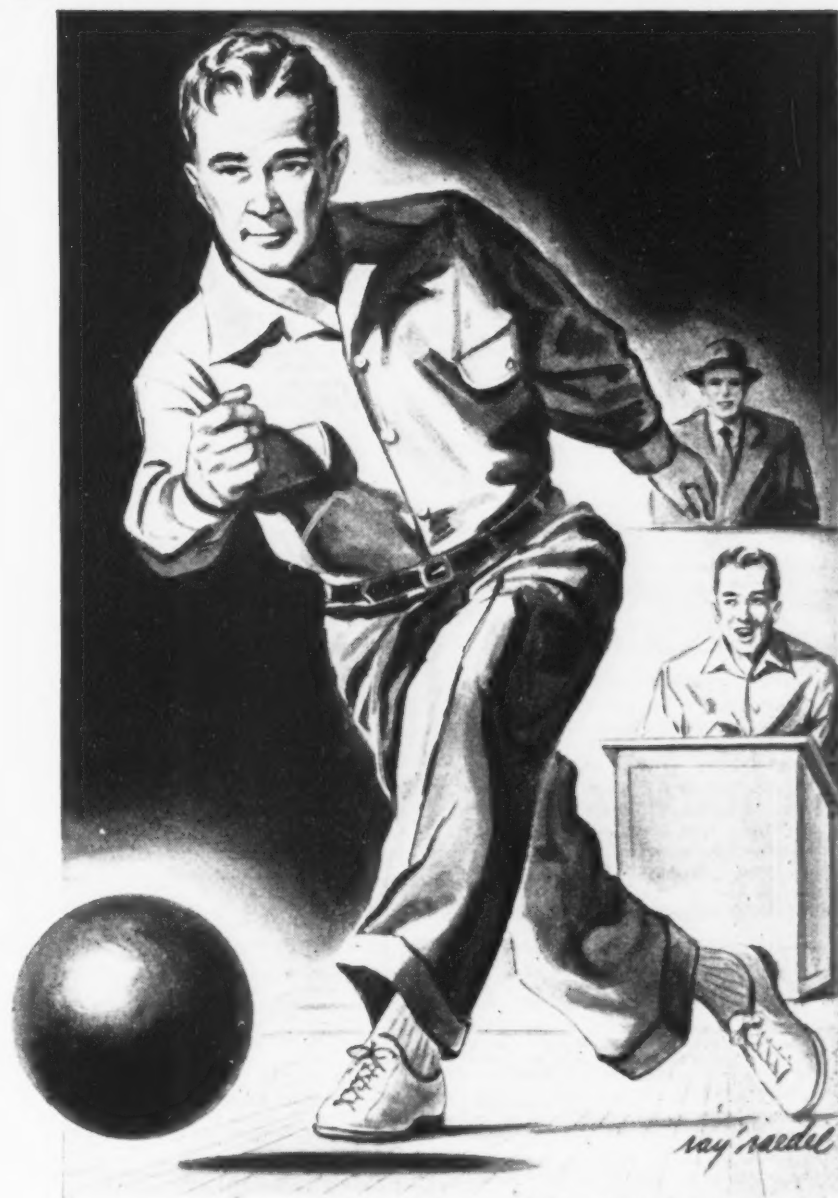
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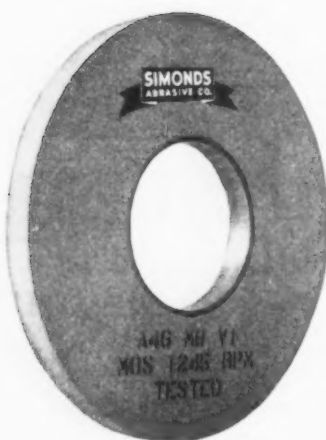
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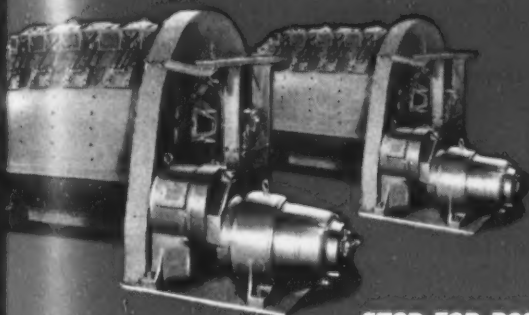
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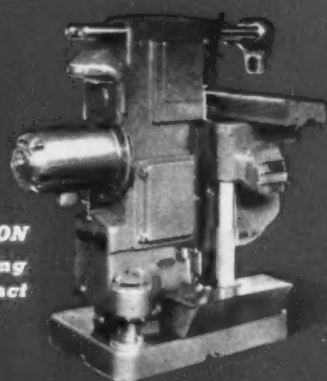
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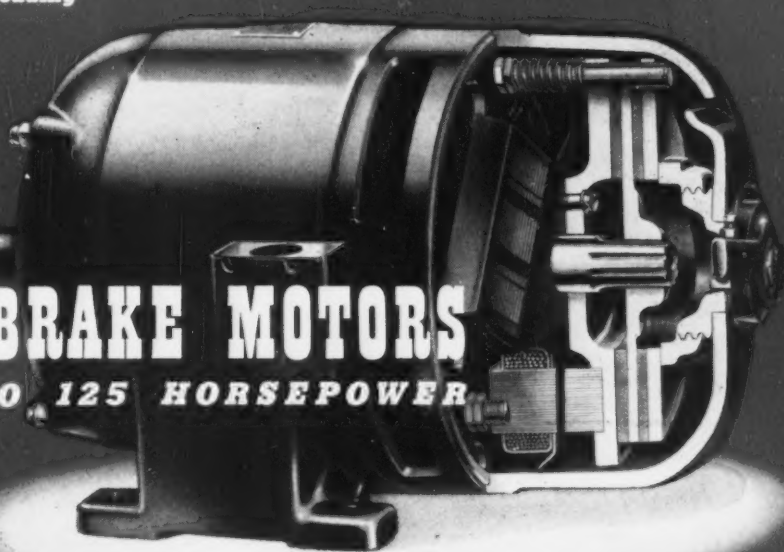
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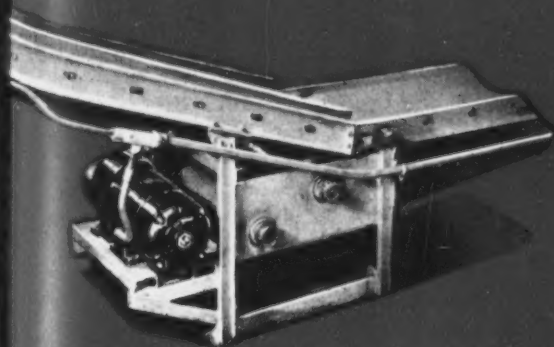


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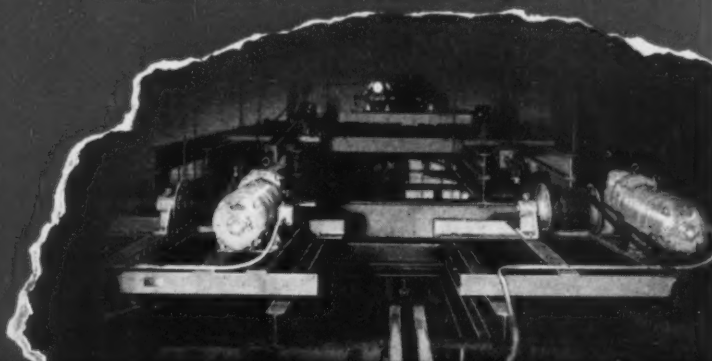


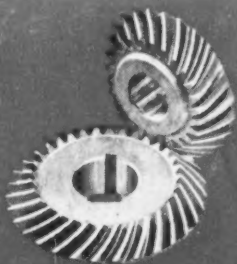
#### STOP FOR SAFETY

Reduce the hazard of injury to workmen or damage to equipment which might cripple vital production

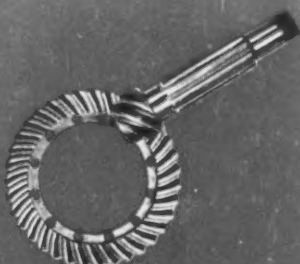
#### STOP AND HOLD ANY LOAD

Unibrake motors are very advantageous on hoist, elevators, inclined conveyors, etc. ...

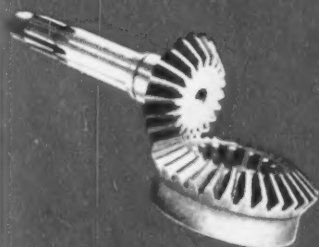




SPIRAL BEVEL GEARS



HYPOID BEVEL GEARS



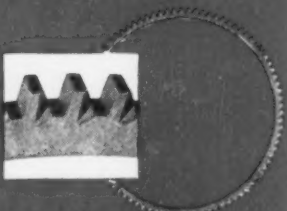
ZEROL BEVEL GEARS



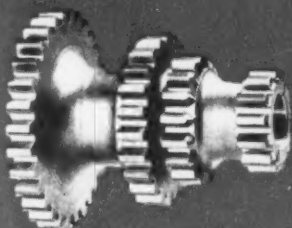
STRAIGHT BEVEL GEARS



ANGULAR BEVEL GEARS



FLYWHEEL RING GEARS



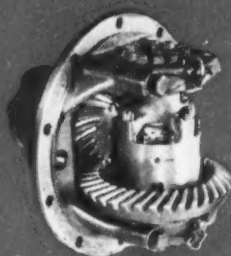
SPUR GEARS



HELICAL GEARS



SPLINE SHAFTS



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Through 35 years of gear making, these are the 10 gear types that have emerged as our specialties.

If one (or more) of these types is included in your product, it may pay you to review the facts about Double Diamond Gears contained in this new book.

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